

Daily report

07-10-2020

Analysis and prediction of COVID-19 for EU-EFTA-UK and other countries

Situation report 138

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With the financial support of



and



Foreword

The present report aims to provide a comprehensive picture of the **pandemic situation of COVID-19** in the EU countries, and to be able to foresee the situation in the next coming days. We provide some figures and tables with several **indexes and indicators** as well as an **Analysis** section that discusses a specific topic related with the pandemic.

As for the predictions, we employ an **empirical model**, verified with the evolution of the number of confirmed cases in previous countries where the epidemic is close to conclude, including all provinces of China. The model does not pretend to interpret the causes of the evolution of the cases but to permit the **evaluation of the quality of control measures made in each state** and a **short-term prediction of trends**. Note, however, that the effects of the measures' control that start on a given day are not observed until approximately 7-14 days later.

We show an individual report with 8 graphs and a summary table with the main indicators for different countries and regions. We are adjusting the model to **countries and regions** with at least 4 days with more than 100 confirmed cases and a current load over 200 cases.

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These reports are funded by the European Commission (DG CONNECT, LC-01485746)

PJC and MC received funding from "la Caixa" Foundation (ID 100010434), under agreement LCF/PR/GN17/50300003; CP, DL, SA, MC, received funding from Ministerio de Ciencia, Innovación y Universidades and FEDER, with the project PGC2018-095456-B-I00;

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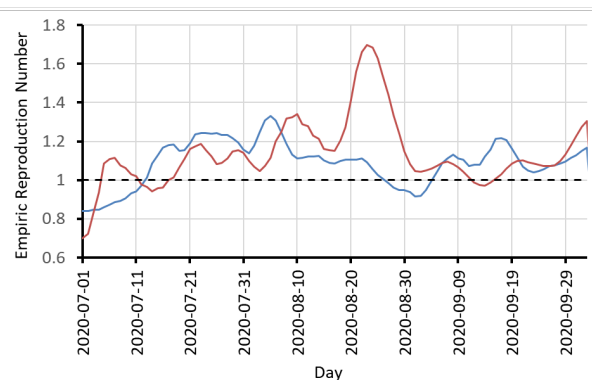
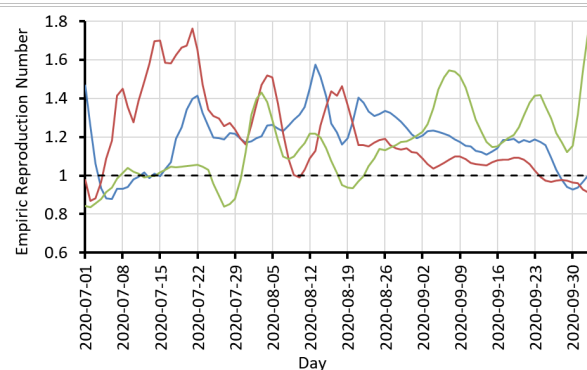
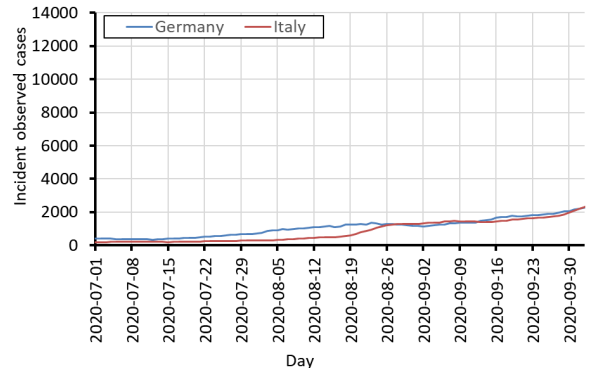
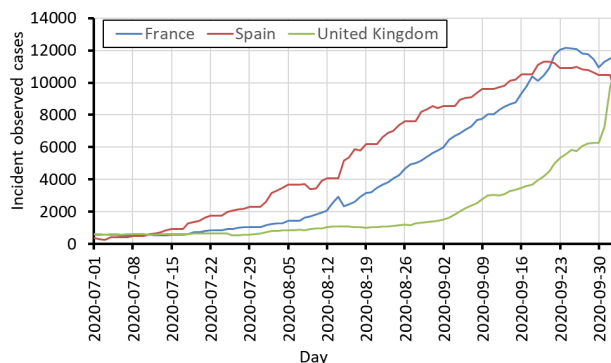
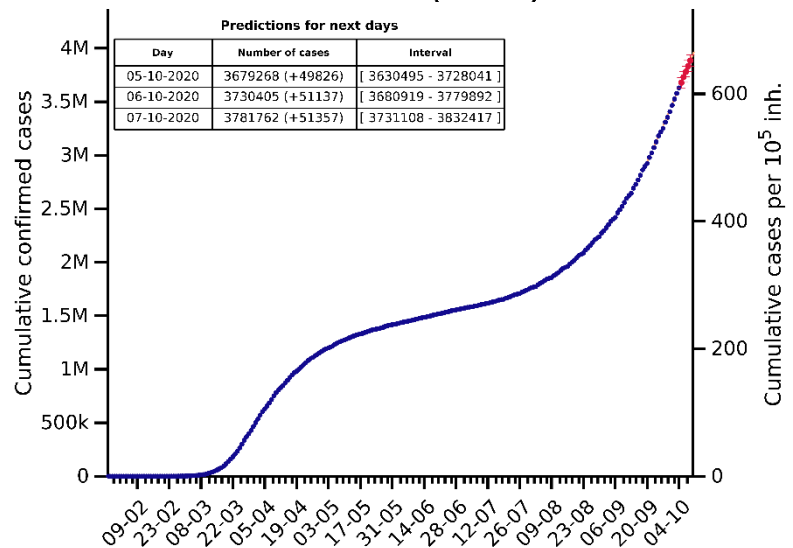
Situation and highlights

Global situation

Growth in most countries is becoming increasingly evident. However, there are some countries where this growth may seem less worrying. We will compare France, Spain and the UK with Germany and Italy, in order to try inferring the evolution of the least growing countries (Germany and Italy). In the following figures, we represent the daily new cases and the empirical reproduction number (ρ_7), all of them calculated with the 7-day moving average of new cases. It is very worrying to note that, since July, the ρ_7 in all countries is almost always higher than 1, so the growth is constant. If we average ρ_7 from July 1 to October 4 we find: France 1.17; Spain 1.20; UK 1.25; Germany 1.08; Italy 1.13.

Indeed, the average rate of spread of the pandemic has been higher in the UK, Spain and France than in Germany and Italy. However, these two countries are also showing a growing trend. They are in the situation of Spain at the end of July. Its growth may be slower, but if the value of the reproductive number is not reduced, its trajectory will be similar to that of the other three countries. On the other hand, the gradual decline in reproduction numbers in Spain and France conveys some optimism.

EU+EFTA+UK (595.7M)



Highlights

- Highest 14-day cumulative incidence corresponds to Czech Republic (344), which overcomes Spain (304).
- The list of countries with an $EPG > 100$ increases from 15 to 17. Denmark leaves the list, but Portugal, Lichtenstein and Malta are added to it.
- United Kingdom reports such an increase in new cases that ρ_7 increases up to 1.8. It is currently the third country at highest risk after Czech Republic (467) and the Netherlands (350). Spain and France show a slight decrease on the risk index and situate at the level of 277 and 256, respectively.
- Only Denmark shows a ρ_7 clearly below 1 (0.8).

Situation and trends per country

Maps of current situation in EU countries. Colour scale is indicated in each legend.

- Cumulative incidence: total number of reported cases per 100,000 inhabitants
- A_{14} : Cumulative incidence last 14 days per 100,000 inhabitants (active cases)
- ρ_7 : Empiric reproduction number
- EPG: Effective Potential Growth ($EPG = A_{14} \cdot \rho_7$)

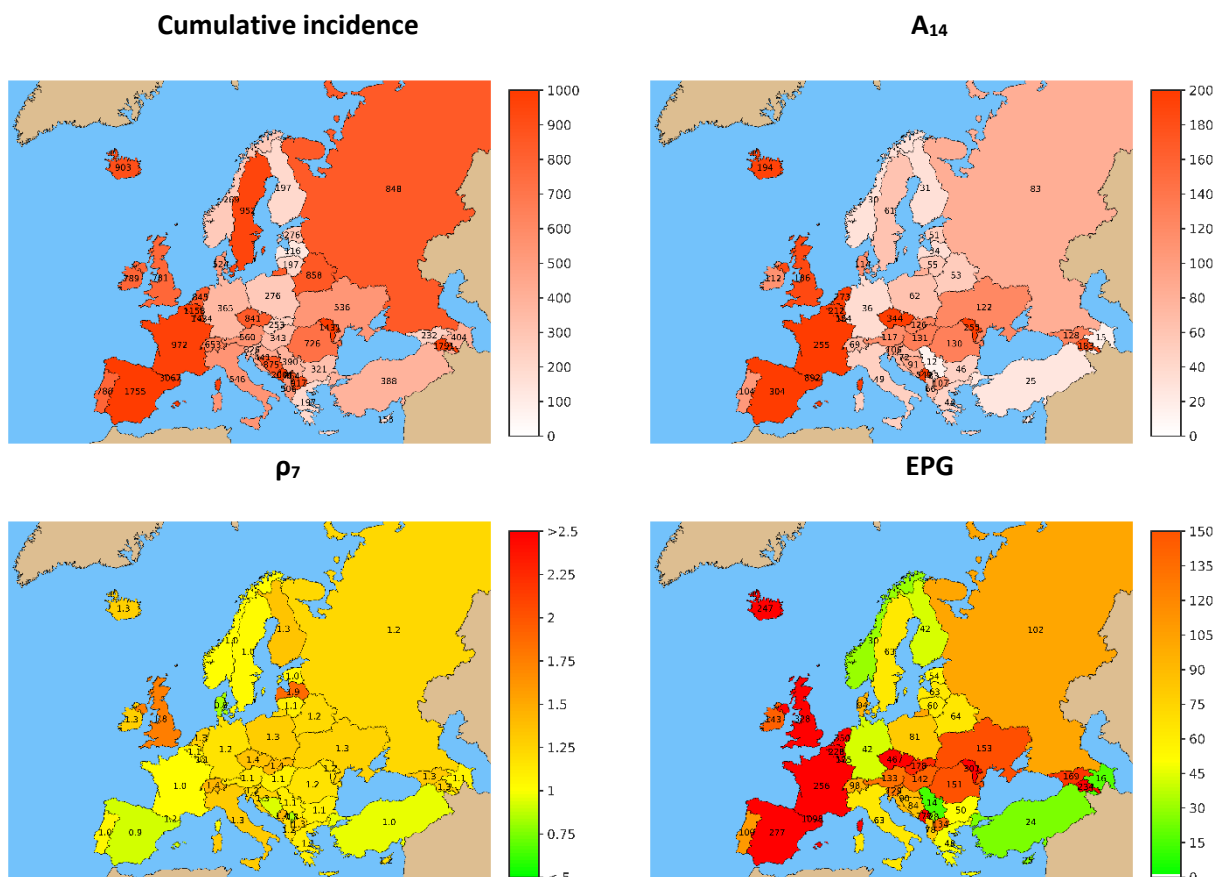


Table of current situation in EU countries. Colour scale is indicated in each legend.

Country	Reported data						Indexes		
	14-day attack rate /10 ⁵ inh.	Active cases (last 14 days)	Attack rate /10 ⁵ inh.	Cumulative cases	Mortality /10 ⁵ inh.	Cumulative deaths	$\rho_7^{(1)}$	EPG ⁽²⁾	Biocom-Cov degree
Czech Republic	344.2	36,864	840.6	90,022	7.4	794	1.36	467	9
Spain	304.4	143,143	1,755.2	825,410	69.1	32,486	0.91	277	9
Netherlands	272.5	46,696	845.3	144,838	37.8	6,473	1.28	350	9
France	255.4	166,694	972.5	634,763	49.6	32,365	1.00	256	9
Belgium	212.2	24,598	1,157.9	134,197	87.1	10,092	1.07	228	9
Iceland	194.0	662	902.9	3,081	2.9	10	1.28	247	9
United Kingdom	186.4	126,562	780.9	530,113	62.5	42,445	1.76	328	9
Luxembourg	153.8	963	1,434.4	8,979	20.4	128	1.14	175	8
Hungary	131.1	12,664	342.8	33,114	9.1	877	1.08	142	8
Romania	129.8	24,964	725.7	139,612	26.6	5,121	1.17	151	8
Malta	126.6	559	764.1	3,374	9.1	40	1.41	178	8
Slovakia	126.0	6,881	253.0	13,812	1.0	55	1.41	178	8
Austria	117.0	10,538	560.0	50,435	9.3	840	1.13	133	8
Denmark	113.6	6,580	524.5	30,379	11.4	663	0.83	94	7
Ireland	112.0	5,531	789.3	38,975	36.7	1,811	1.28	143	8
Slovenia	106.3	2,210	325.6	6,768	6.8	141	1.21	129	8
Portugal	104.4	10,649	787.6	80,312	19.9	2,032	1.05	109	7
Croatia	71.8	2,948	440.5	18,084	7.4	304	1.26	90	7
Switzerland	68.8	5,954	652.9	56,502	20.6	1,786	1.43	98	7
Poland	62.4	23,617	275.6	104,316	7.2	2,717	1.30	81	7
Sweden	61.4	6,198	952.0	96,145	58.3	5,883	1.03	63	6
Lithuania	55.4	1,507	197.1	5,366	3.6	99	1.09	60	6
Estonia	51.5	683	275.8	3,659	5.1	67	1.05	54	6
Italy	48.6	29,366	546.2	330,263	59.6	36,030	1.30	63	6
Bulgaria	45.8	3,183	321.0	22,306	12.4	862	1.09	50	6
Greece	44.3	4,613	197.1	20,541	4.0	420	1.09	48	6
Liechtenstein	36.7	14	340.9	130	2.6	1	3.00	110	6
Germany	36.0	30,159	365.3	306,086	11.4	9,562	1.17	42	5
Latvia	33.6	634	116.3	2,194	2.1	39	1.88	63	6
Finland	31.3	1,734	197.2	10,929	6.2	346	1.35	42	5
Norway	29.6	1,604	269.4	14,604	5.1	275	1.01	30	5
Cyprus	21.4	258	155.4	1,876	1.9	23	1.18	25	4

Colour scale								
>150.0	Worst	Worst	Worst	Worst	Worst	>2.0	>150	
0.0	Best	Best	Best	Best	Best	0.0	0	

Table of current situation in some EU provinces. Colour scale is indicated in each legend.

Province	Reported data						Indexes		
	14-day attack rate /10 ⁵ inh.	Active cases (last 14 days)	Attack rate /10 ⁵ inh.	Cumulative cases	Mortality /10 ⁵ inh.	Cumulative deaths	$\rho_7^{(1)}$	EPG ⁽²⁾	Biocom-Cov degree
Madrid	737.3	48,964	3,595.1	238,741	141.6	9,405	0.99	732	9
Prague	545.3	6,936	1,543.5	19,633	NA	NA	1.20	657	9
London	111.1	9,960	621.7	55,709	NA	NA	1.51	168	8
Berlin	76.0	2,863	430.8	16,237	6.1	231	1.35	103	7
Lazio (Rome)	55.3	3,252	306.7	18,032	16.1	948	1.14	63	6

Colour scale								
>150.0	Worst	Worst	Worst	Worst	Worst	>2.0	>150	
0.0	Best	Best	Best	Best	Best	0.0	0	

⁽¹⁾ ρ_7 is the average of 7 consecutive ρ , but can still fluctuate. ⁽²⁾ EPG stands for Effective Growth Potential, which is the product of reported cumulative incidence of last 14 days per 10⁵ inhabitants by ρ_7 (empiric reproduction number). Biocom-Cov degree is an epidemiological situation scale based on the level of last week's mean daily new cases (<https://upcommons.upc.edu/handle/2117/189661>, <https://upcommons.upc.edu/handle/2117/189808>).

Situation of hospitalisations and ICUs in some EU countries. The analysis is done for those countries that report a historical series with current (active) number of patients in hospitals and ICUs¹. We provide:

- Current active hospitalisations and patients in ICU per 100,000 inhabitants.
- Current absolute number of active hospitalisations and patients in ICU.
- Rate of occupation of curative care hospital beds by Covid-19 patients (data from Eurostat 2018²), only for hospitalisations.
- Current rate of occupation with regards to the maximum Covid-19 occupation reached in this pandemic.
- Weekly increase in Covid-19 patients in hospitals and ICUs.

Country	Hospitalisations					Intensive Care Units			
	Active /10 ⁵ inh.	Active (total)	Occupation (Eurostat 2018) (%)	Occupation (historical maximum) (%)	Week-to-week Growth (%)	Active /10 ⁵ inh.	Active (total)	Occupation (historical maximum) (%)	Week-to-week Growth (%)
France	11.3	7398	3.6	22.9	9.9	2.2	1426	20.2	16.0
Austria	10.4	935	2.0	100.0	3.0	1.5	138	46.2	8.5
Belgium	8.1	937	1.7	16.3	25.7	1.7	195	15.2	40.1
Portugal	7.2	732	2.2	100.0	7.8	1.0	104	45.6	13.8
Hungary	6.8	656	1.6	84.9	1.1	0.4	41	75.9	-1.0
Italy	6.5	3944	2.5	12.0	13.9	0.5	319	7.8	16.7
Slovakia	6.2	340	1.3	100.0	34.9	0.3	16	94.1	0.0
Slovenia	5.4	112	1.3	94.1	27.5	1.1	22	59.5	9.7
Switzerland	2.0	170	0.6	7.5	-5.2	0.3	24	6.2	8.9

Colour scale
>20%
-20%

Colour scale
>20%
-20%

¹ <https://github.com/ec-jrc/COVID-19>

² https://ec.europa.eu/eurostat/databrowser/view/hlth_rs_bds/default/table?lang=en

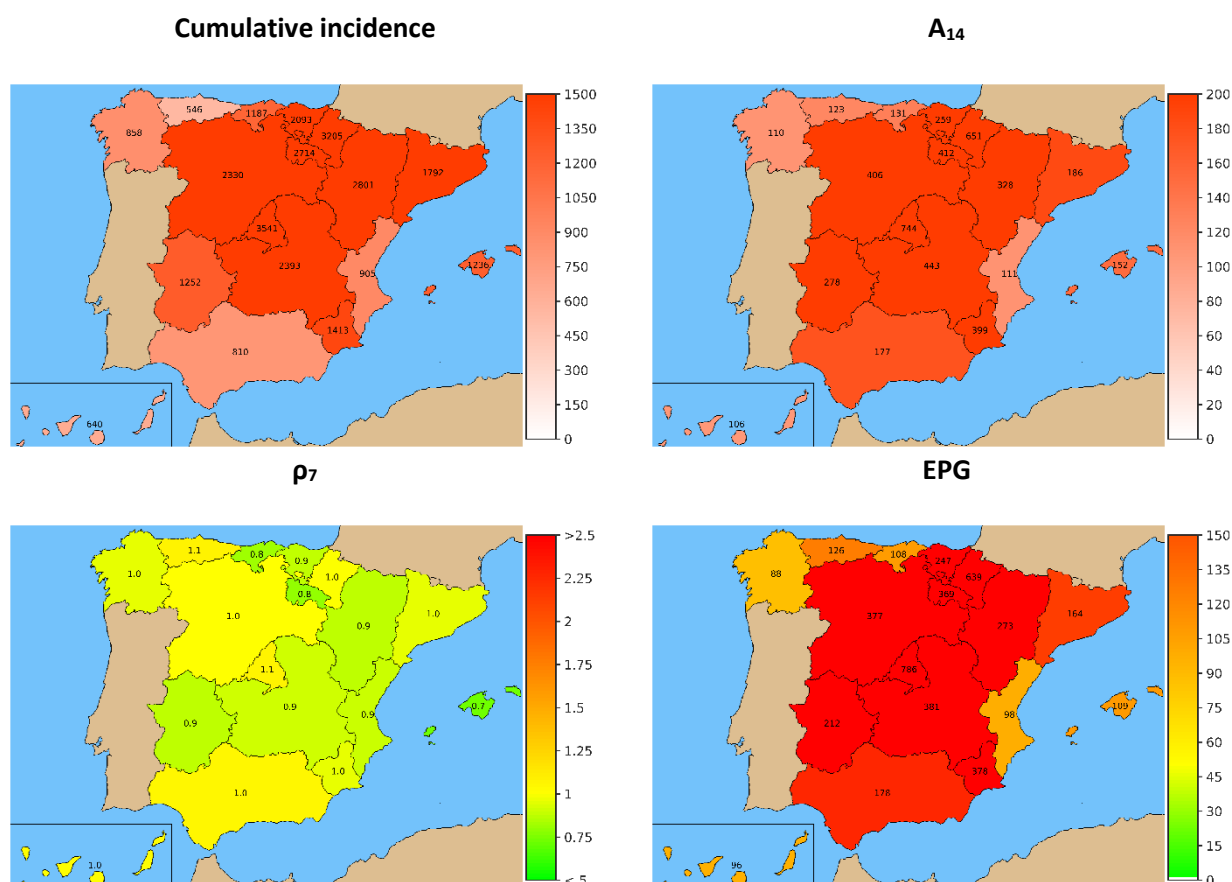
Situation and trends in some European regions³

Table of current situation in Spain regions. Colour scale is indicated in each legend.

Country	Reported data						Indexes		
	14-day attack rate /10 ⁵ inh.	Active cases (last 14 days)	Attack rate /10 ⁵ inh.	Cumulative cases	Mortality /10 ⁵ inh.	Cumulative deaths	$\rho_7^{(1)}$	EPG ⁽²⁾	Biocom-Cov degree
Madrid	737.3	48,964	3,595.1	238,741	141.6	9,405	0.99	732	9
Navarra	649.7	4,223	3,268.3	21,243	88.9	578	0.96	622	9
Castilla-La Mancha	421.5	8,579	2,406.9	48,993	151.3	3,079	0.84	352	9
Castilla y Leon	401.6	9,672	2,353.1	56,664	126.9	3,055	0.90	362	9
Melilla	393.1	333	1,307.9	1,108	5.9	5	1.16	458	9
La Rioja	391.6	1,228	2,766.1	8,674	132.3	415	0.94	367	9
Murcia	385.7	5,738	1,438.1	21,395	10.7	159	0.91	350	9
Aragon	312.9	4,133	2,811.8	37,138	105.3	1,391	0.82	258	9
Extremadura	273.6	2,915	1,274.5	13,578	54.3	578	0.75	206	9
Euskadi	254.3	5,539	2,141.1	46,635	86.8	1,890	0.97	247	9
Ceuta	251.1	213	861.6	731	11.8	10	1.20	301	9
Catalunya	188.0	14,226	1,833.9	138,738	77.3	5,847	0.90	168	8
Andalucia	176.5	14,875	821.0	69,183	21.5	1,811	0.96	170	8
Baleares	135.0	1,603	1,202.3	14,281	25.3	300	0.75	101	7
Asturias	128.8	1,317	560.5	5,730	33.6	344	1.05	136	8
Cantabria	119.8	697	1,193.9	6,945	38.7	225	0.83	99	7
Galicia	108.8	2,939	864.5	23,345	27.3	737	0.79	86	7
Comunitat Valenciana	107.6	5,353	915.8	45,555	32.2	1,604	0.86	92	7
Canarias	101.0	2,229	630.0	13,905	10.6	234	0.87	87	7

Colour scale							
>150.0	Worst	Worst	Worst	Worst	Worst	>2.0	>150
0.0	Best	Best	Best	Best	Best	0.0	0

Maps of current situation in Spanish regions. Colour scale is indicated in each legend.



³ <https://github.com/ec-jrc/COVID-19/tree/master/data-by-region>

Table of current situation in UK regions. Colour scale is indicated in each legend.

Country	Reported data				Indexes		
	14-day attack rate /10 ⁵ inh.	Active cases (last 14 days)	Attack rate /10 ⁵ inh.	Cumulative cases	$\rho_7^{(1)}$	EPG ⁽²⁾	Biocom-Cov degree
North West	512.6	37,629	1,494.7	109,727	1.88	962	9
Lanarkshire	465.2	1,484	1,687.1	5,382	1.70	792	9
North East and Yorkshire	366.4	29,945	1,183.7	96,735	2.20	806	9
Northern Ireland	339.5	6,426	855.1	16,187	1.77	603	9
Greater Glasgow and Clyde	301.9	3,611	933.5	11,165	1.26	380	9
Lothian	219.9	1,887	692.2	5,939	1.39	305	9
Wales	193.8	6,076	880.9	27,624	1.26	245	9
Midlands	181.6	18,402	871.3	88,302	2.01	365	9
Eileanan Siar (Western Isles)	153.6	43	189.3	53	0.97	149	8
Ayrshire and Arran	119.9	440	543.6	1,995	1.58	190	8
London	119.8	10,739	636.3	57,019	1.94	233	8
Forth Valley	108.2	331	544.8	1,667	1.75	189	8
Tayside	106.3	422	684.1	2,716	0.92	97	7
Fife	93.6	350	405.1	1,515	1.05	98	7
East of England	73.4	4,579	549.1	34,239	2.00	147	7
Highland	73.3	173	316.5	747	1.17	86	7
Dumfries and Galloway	70.3	104	313.5	464	0.99	70	7
South West	69.2	3,894	368.2	20,711	2.34	162	7
Grampian	69.0	345	497.0	2,485	1.03	71	6
South East	66.9	6,143	519.2	47,664	2.25	150	7
Borders	61.7	71	477.4	549	1.04	64	6
Orkney	18.2	4	104.5	23	0.10	2	0
Shetland	0.0	0	260.9	60	NA	NA	0

Colour scale						
>150.0	Worst	Worst	Worst	>2.0	>150	
0.0	Best	Best	Best	0.0	0	

Table of current situation in Austria regions. Colour scale is indicated in each legend.

Region	Reported data						Indexes		
	14-day attack rate /10 ⁵ inh.	Active cases (last 14 days)	Attack rate /10 ⁵ inh.	Cumulative cases	Mortality /10 ⁵ inh.	Cumulative deaths	$\rho_7^{(1)}$	EPG ⁽²⁾	Biocom-Cov degree
Salzburg	263.8	401	1,594.7	2,424	28.3	43	1.17	309	9
Wien	226.8	4,302	955.4	18,124	13.8	262	1.06	241	9
Tirol	122.4	924	879.3	6,639	13.5	102	1.40	171	8
Vorarlberg	105.3	415	532.7	2,099	5.8	23	1.25	131	8
Niederösterreich	99.2	1,665	450.4	7,558	7.3	123	1.06	106	7
Oberösterreich	80.9	1,199	488.3	7,237	4.8	71	1.23	100	7
Burgenland	69.8	201	318.8	918	3.8	11	1.10	77	7
Steiermark	42.0	522	304.7	3,787	12.7	158	0.92	39	5
Kärnten	37.3	208	182.6	1,017	2.3	13	1.04	39	5

Colour scale							
>150.0	Worst	Worst	Worst	Worst	Worst	>2.0	>150
0.0	Best	Best	Best	Best	Best	0.0	0

Table of current situation in Portugal regions. Colour scale is indicated in each legend.

Region	Reported data						Indexes		
	14-day attack rate /10 ⁵ inh.	Active cases (last 14 days)	Attack rate /10 ⁵ inh.	Cumulative cases	Mortality /10 ⁵ inh.	Cumulative deaths	$\rho_7^{(1)}$	EPG ⁽²⁾	Biocom-Cov degree
Lisbon	197.1	5,584	1,455.2	41,225	28.6	811	0.85	167	8
Norte	122.1	4,370	823.6	29,469	25.2	900	1.17	143	8
Algarve	100.0	440	423.2	1,862	4.5	20	0.85	85	7
Centro	39.0	874	292.8	6,561	12.0	269	0.89	35	5
Alentejo	33.9	243	222.8	1,595	3.5	25	0.62	21	4
Madeira	19.2	49	100.8	257	0.0	0	1.52	29	4
Açores	13.5	33	117.6	287	6.1	15	0.81	11	3

Colour scale								
>150	Worst	Worst	Worst	Worst	Worst	>2.0	>150	
0.0	Best	Best	Best	Best	Best	0.0	0	

Situation and trends in other countries

Country	Reported data						Indexes		
	14-day attack rate /10 ⁵ inh.	Active cases (last 14 days)	Attack rate /10 ⁵ inh.	Cumulative cases	Mortality /10 ⁵ inh.	Cumulative deaths	$\rho_7^{(1)}$	EPG ⁽²⁾	Biocom-Cov degree
Israel	966.5	83,652	3,200.6	277,026	20.8	1,797	0.91	876	9
Argentina	381.2	172,294	1,824.2	824,455	48.3	21,827	1.02	388	9
United States of America	182.9	605,338	2,266.3	7,501,612	63.7	210,909	1.03	189	8
Colombia	181.3	92,271	1,709.4	869,808	53.1	27,017	0.97	175	8
Brazil	177.6	377,537	2,337.8	4,969,141	69.4	147,494	0.99	176	8
Peru	171.0	56,383	2,526.2	832,929	99.8	32,914	0.68	115	8
Iraq	148.0	59,541	962.4	387,121	23.7	9,531	0.96	142	8
Chile	129.6	24,783	2,475.9	473,306	68.4	13,070	0.93	121	8
Ukraine	122.0	53,347	536.4	234,584	10.3	4,520	1.26	153	8
Qatar	105.0	3,026	4,406.1	126,943	7.5	216	0.89	93	7
Russia	83.4	121,694	848.0	1,237,504	14.8	21,663	1.23	102	7
India	82.1	1,111,121	499.4	6,757,131	7.7	104,555	0.93	77	7
Ecuador	81.7	14,413	805.2	142,056	66.3	11,702	0.84	68	7
Canada	65.3	24,660	453.9	171,323	25.3	9,530	1.25	82	7
Iran	60.3	50,632	571.3	479,825	32.6	27,419	1.05	63	6
Belarus	52.8	4,986	858.2	81,090	9.2	868	1.22	64	6
Mexico	49.9	64,295	596.9	769,558	61.8	79,714	0.95	47	6
Philippines	32.0	35,044	298.3	326,833	5.4	5,865	1.08	34	5
Indonesia	21.3	58,253	113.8	311,176	4.2	11,374	0.96	20	4
Saudi Arabia	18.5	6,445	968.7	337,243	14.1	4,923	0.95	18	4
Pakistan	4.0	8,933	143.2	316,351	3.0	6,535	0.87	4	2

Colour scale								
>150.0	Worst	Worst	Worst	Worst	Worst	>2.0	>150	
0.0	Best	Best	Best	Best	Best	0.0	0	

⁽¹⁾ ρ_7 is the average of 7 consecutive ρ , but can still fluctuate. ⁽²⁾ EPG stands for Effective Growth Potential, which is the product of reported cumulative incidence of last 14 days per 10⁵ inhabitants by ρ_7 (empiric reproduction number). Biocom-Cov degree is an epidemiological situation scale based on the level of last week's mean daily new cases (<https://upcommons.upc.edu/handle/2117/189661>, <https://upcommons.upc.edu/handle/2117/189808>).

Analysis: Spanish second wave (V). Assessment on the level of epidemiological surveillance in July. Budget and personnel (part II).

In different assessments during the last weeks, dealing with the analysis of the second wave of covid19 infection in Spain, we wondered about the different hypothesis that can explain Spain as the leading country in new infections. In last report⁴, we started analyzing one of them, related with the health budget and personnel. We discussed the necessary mobility of resources, which is not always possible, and quantified the personnel needed for an efficient contact tracing. In the case of Spain, we quantified these personnel at around 10,000 specialized nurses and supporting technicians. In the case of Catalunya and Aragón, they would need around 1,000-1,500 nurses each. Finally, we also showed that Spain expenditure is roughly at level for European Union, although lower than that of countries like France or the Netherlands. We showed that the percentage of the budget devoted to public health is very small in all European countries.

Therefore, the key question is not the budget per se, but the ability and feasibility to direct personnel and budget from other parts of the budget to fight this pandemic. Today, we focus on one of the key stones of epidemiological surveillance: nursing personnel.

Spain did not have the resources needed to deploy epidemiological surveillance in the question that matters more: nursing personnel. **In other words, the lack of any spare personnel in nursery lead to a complete lack of personnel in doing interviews and contact tracing.**

We have three important sources of proof for that:

- First, our interviews with epidemiologists in the field always indicated that they had the proper number of doctor and epidemiologists to analyze the situation but that public health had basically not enough nursery personnel. Even dedicating all nurses to those units it was not enough given the low level of resources.
- Second, public health officials have indicated that primary care centers had to be the first line of defense to fight Covid-19 instead of but in coordination with territorial epidemiological units. In particular, they must carry out the diagnostic and the contact tracing study, while several external agents are responsible to carry out the calls. It is logical, only primary care have nursery personnel large enough to try to redirect the 10,000 people needed for the contact tracing in Spain. In Catalonia and Aragón, the needs were around 1,000 or, given the level of outbreak, 2,000. The only place to find such a number of nurses was in primary care facilities.
- Third, the numbers of nursery personnel in primary health centers in Spain are not even on the average of Europe. They are basically the bottom of it. The lack in nursery personnel in Spain and most of the regions is simply astounding. We found the key graph in the report State of Health in Spain for the UE⁵.

⁴ <https://upcommons.upc.edu/handle/2117/329875>

⁵ https://ec.europa.eu/health/sites/health/files/state/docs/2019_chp_es_spanish.pdf

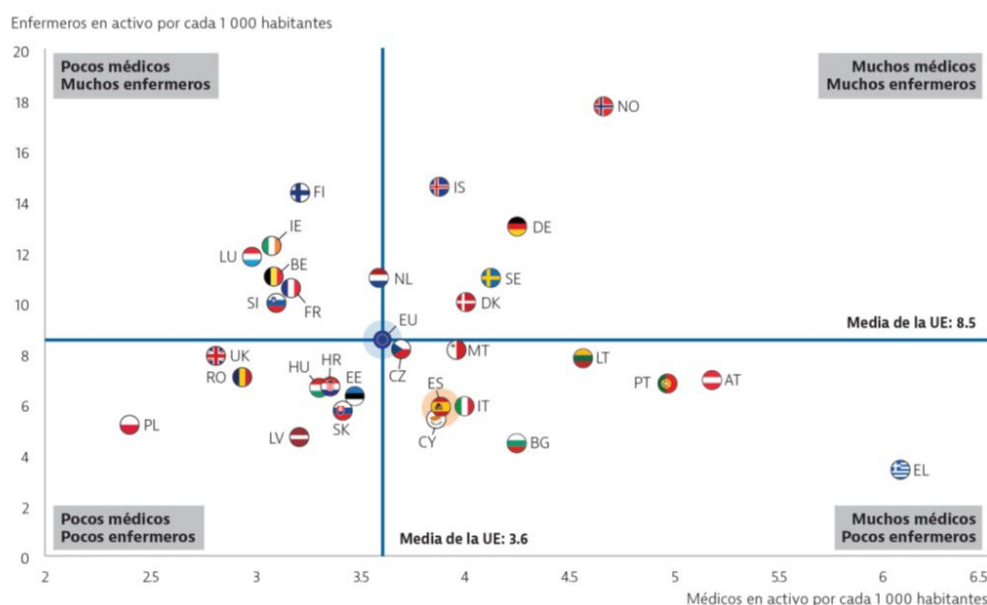


Figure 1: Active nursery personnel (y-axis) vs medical doctors in different European countries. Four quartiles are shown: bottom-left, few doctors-few nurses; bottom-right, many doctors-few nurses; up-left, few doctors-many nurses; up-right, many doctors-many nurses⁶. Blue lines indicate European mean values.

Only Bulgaria and Latvia have clearly lower number of nursery personnel than Spain. Spain is at the bottom together with Poland, Italy and Slovakia. Among the countries that we are comparing Spain with in the second wave, like France, the Netherlands, Belgium, Czech Republic or Romania, all of them have more nursery personnel. In fact, France and the Netherlands almost double its numbers

Spain has roughly 280,000 nursery personnel, half of them attached to public hospitals. Another huge fraction is private personnel, since a wide part of the health care budget is private and cannot be deployed for contact tracing. So, the key data is how much nurses are working in primary care both in Spain and in the regions where the first outbreak appeared. We show these numbers in the following table⁷. As we can see, the total number of nursery personnel working in primary care (second column) is 30,000. Recall that the total number of contact tracers needed in Spain is roughly 10,000. In other words, proper contact tracing would require re-training or redirecting 1/3 of the workforce. Performing Covid-19 duties plus normal care is absolutely impossible without complete exhaustion of personnel working more than 10 hours per day non-stop. This is plainly impossible. In Catalonia and Aragon, for example, 6,000 nurses were in primary care, and 1,500 were needed to keep track of normal small outbreak.

⁶ https://ec.europa.eu/health/sites/health/files/state/docs/2019_chp_es_spanish.pdf

⁷ <https://www.mscbs.gob.es/estadEstudios/sanidadDatos/tablas/tabla14.htm>

Table 1: Distribution of nursery personnel (total, first column) among primary care (second column), hospitals (third), urgencies and emergencies (fourth) and specialized formation (fifth). Last column indicates the ratio of nurses per 1,000 inhabitants. Data by Spanish autonomous community.

	Total profesionales de la enfermería	Equipos de Atención Primaria	Hospitales	Servicio de urgencias y emergencias	Profesionales de la enfermería en formación especializada	Total de profesionales de la enfermería por cada 1.000 habitantes
SNS	185.835	30.499	150.269	3.061	2.006	4,0
Andalucía	28.104	4.726	22.448	632	298	3,3
Aragón	7.056	961	5.930	104	61	5,4
Asturias, Principado	4.962	761	4.093	37	71	4,8
Balears, Illes	4.650	568	3.935	98	49	4,0
Canarias	8.909	1.836	6.816	166	91	4,1
Cantabria	2.535	432	2.070	23	10	4,4
Castilla y León	10.678	2.106	8.224	205	143	4,4
Castilla-La Mancha	8.476	1.456	6.733	184	103	4,2
Cataluña	30.426	5.398	24.295	426	307	4,0
Comunitat Valenciana	16.962	2.969	13.571	256	166	3,4
Extremadura	4.708	904	3.645	100	59	4,4
Galicia	10.882	1.809	8.891	81	101	4,0
Madrid, Comunidad de	24.987	3.319	21.096	240	332	3,8
Murcia, Región de	5.403	817	4.172	323	91	3,7
Navarra, C. Foral de	2.944	507	2.398	27	12	4,6
País Vasco-Euskadi	12.189	1.558	10.409	132	90	5,6
Rioja, La	1.339	290	1028	17	4	4,3

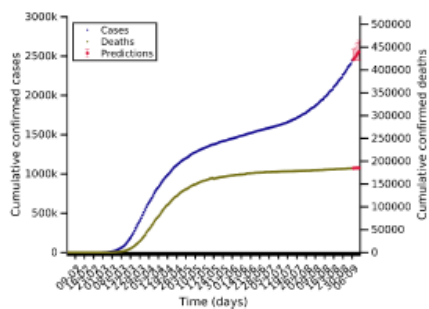
We reach a very clear conclusion. **Without hiring more personnel in primary care and public health units specialized in making interviews, tracing contacts, and deciding who requires a PCR test (being asymptomatic), tracing an important outbreak in Spain was plainly impossible**

It is thus not strange to observe that the cornerstone of the plan to control Covid-19 in Catalunya has been to deploy 1,000 Covid agents in primary care plus another 1,000 people in other positions (call centers) to reduce the work load from nurses and medical doctors. This deployment was carried out during the month of August. Compared with Madrid, who did not deploy these numbers, the different evolution of both regions is astounding. However, we must resist direct comparison since measures for reducing were also applied in Catalunya. With the present level of incidence in Catalunya (weekly incidence of 100 cases per 100,000 inhabitants), the amount of people and PCR to control it is huge. Therefore, this incidence is almost impossible to manage without measures that reduce the number of effective contacts to track. In this line of thought, one of the key measures in Catalunya has been to forbid any gathering of more than six people, trying to focus on less than 10 people per infected person. So far, the measures and deployment have been good enough to control incidence but not to reduce it.

Legend: Countries' reports details

Reported cumulative cases (blue) and deaths (brown), together with predictions (red)

EU+EFTA+UK 06-09-2020. Pop: 2632.4M. Cumulative incidence: 93/10⁵

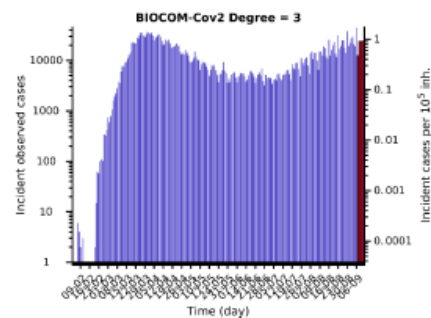
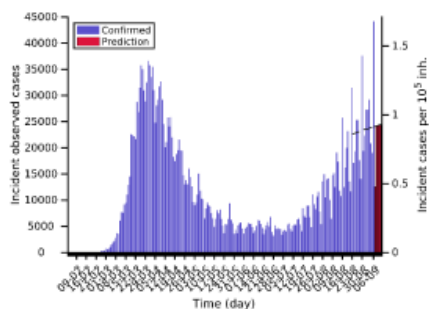


Predictions for next days		
Day	Number of cases	95% confidence interval
07-09-2020	2458068 (+125771)	[2445493 - 2586148]
09-09-2020	2568527 (+242758)	[2440483 - 2638980]
11-09-2020	2553558 (+244355)	[2440483 - 2798209]

Current indicators		
R_{eff}	RPI	CFR
1.3	14	1.17 %

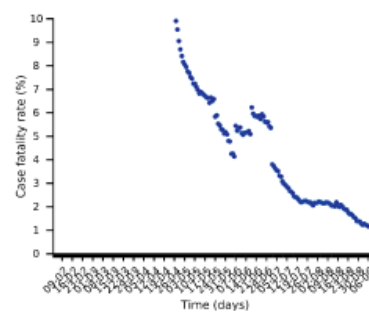
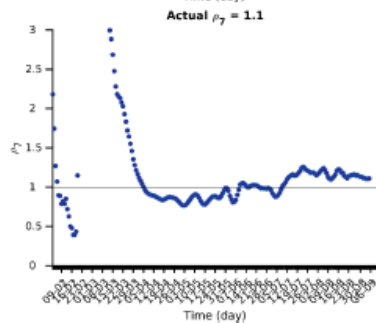
Predictions and indicators

Incident observed cases and predictions.



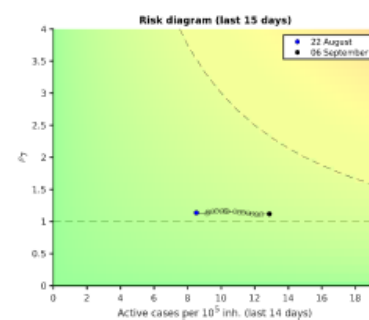
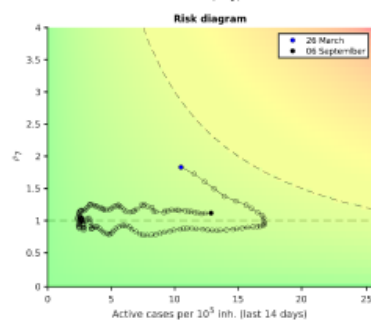
Incident observed cases in a logarithmic scale, with Biocom-Cov degree.

Evolution of empiric reproduction number ρ_T



Case fatality rate

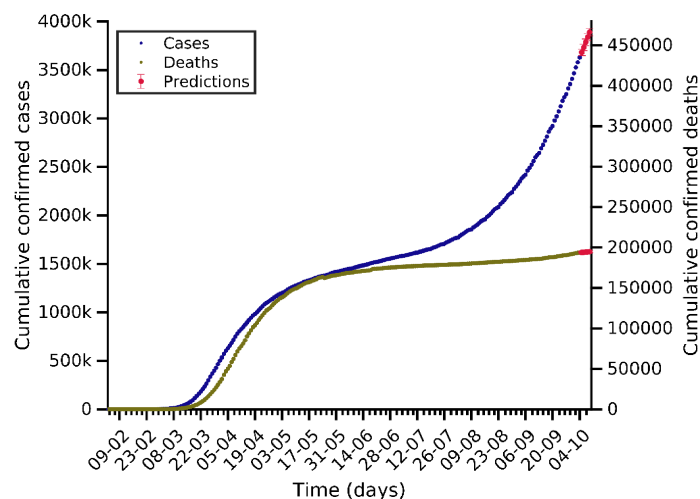
Risk diagram



Risk diagram of last 15 days

**(1) Analysis and prediction of COVID-19
for EU+EFTA+UK**

EU+EFTA+UK 04-10-2020. Pop: 527.9M. Cumulative incidence: 688/10⁵

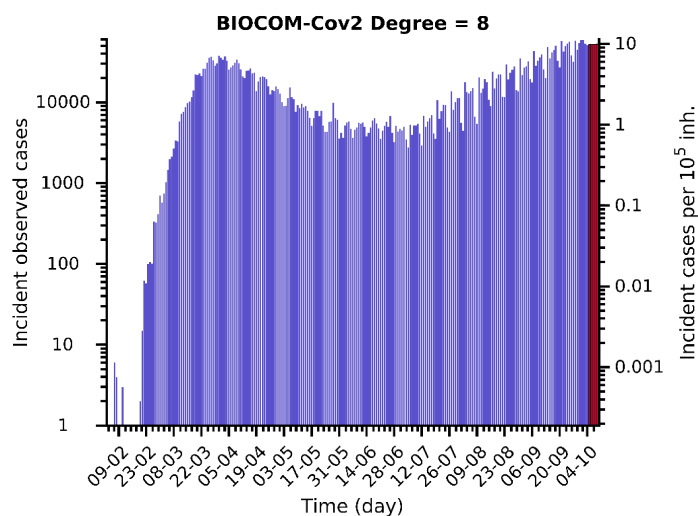
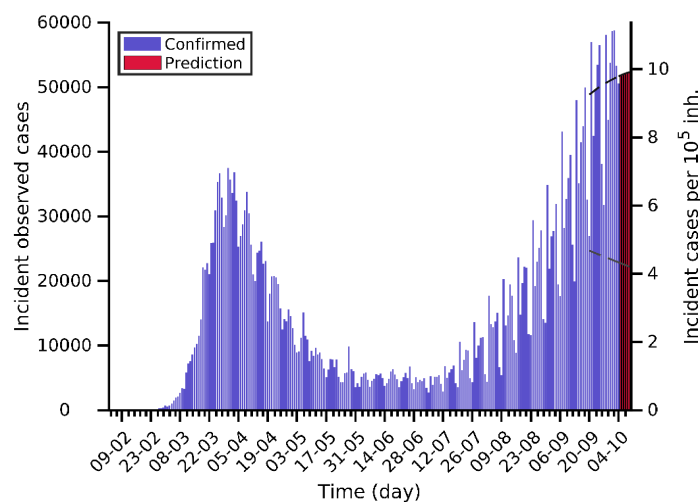


Predictions for next days

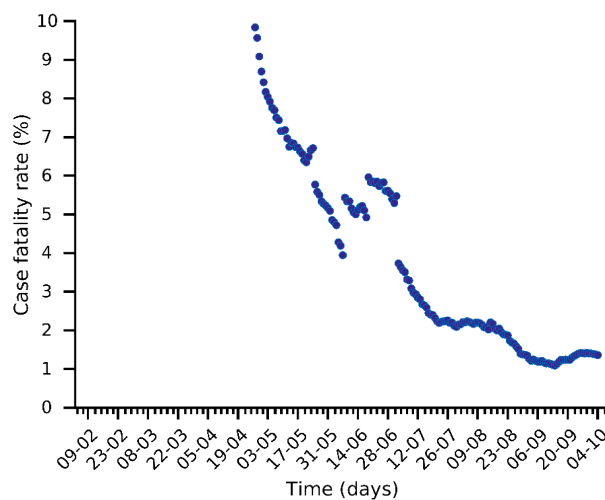
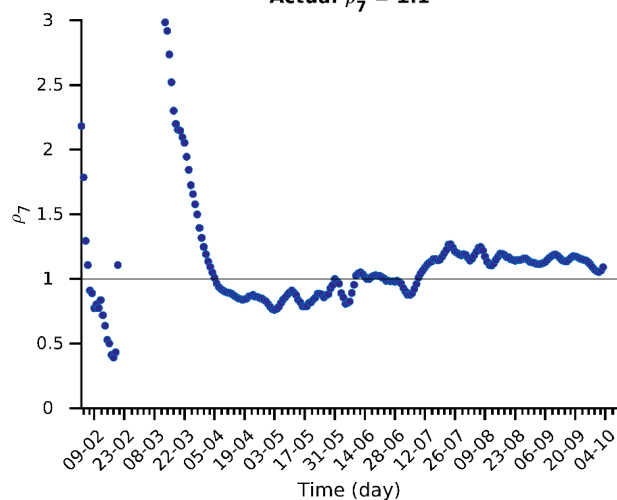
Day	Number of cases	95% Confidence Interval
05-10-2020	3681290 (+51848)	[3647960 - 3714620]
07-10-2020	3785312 (+52073)	[3750596 - 3820028]
09-10-2020	3889798 (+52297)	[3852059 - 3927536]

Current indicators

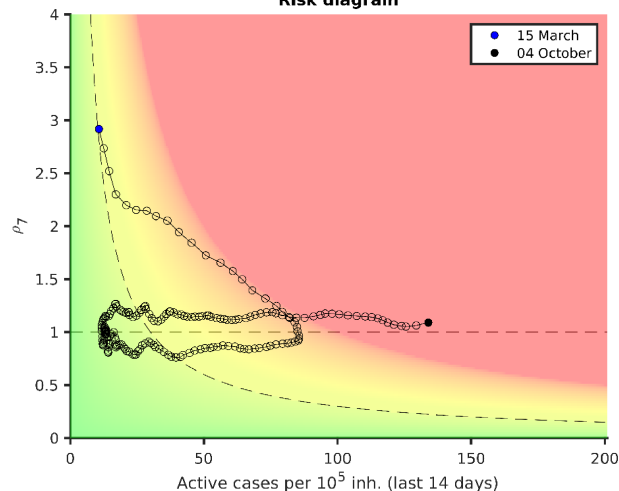
A ₁₄	EPG	CFR
134	146	1.36 %



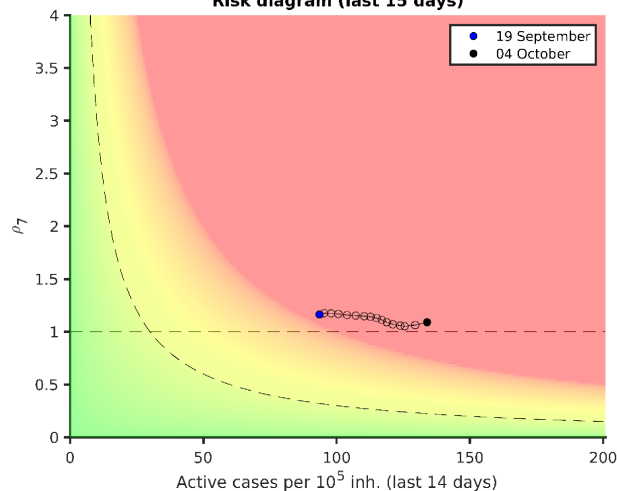
Actual $\rho_7 = 1.1$



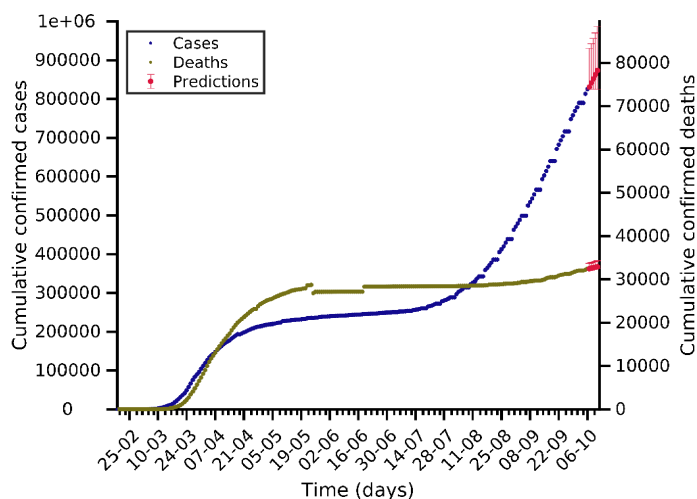
Risk diagram



Risk diagram (last 15 days)



Spain 06-10-2020. Pop: 47.0M. Cumulative incidence: 1755/10⁵

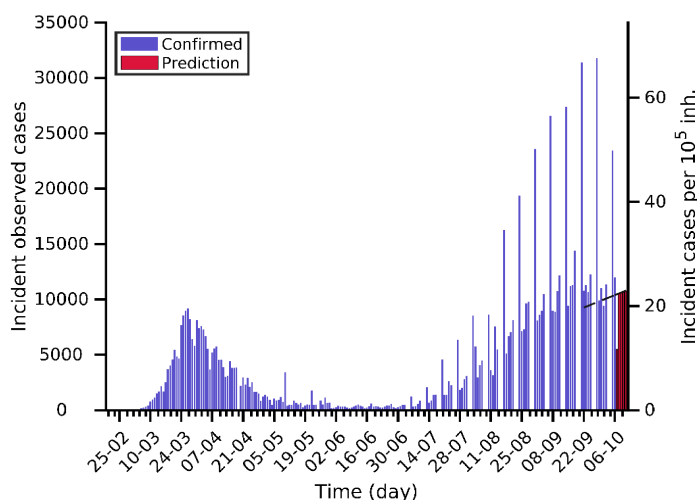


Predictions for next days

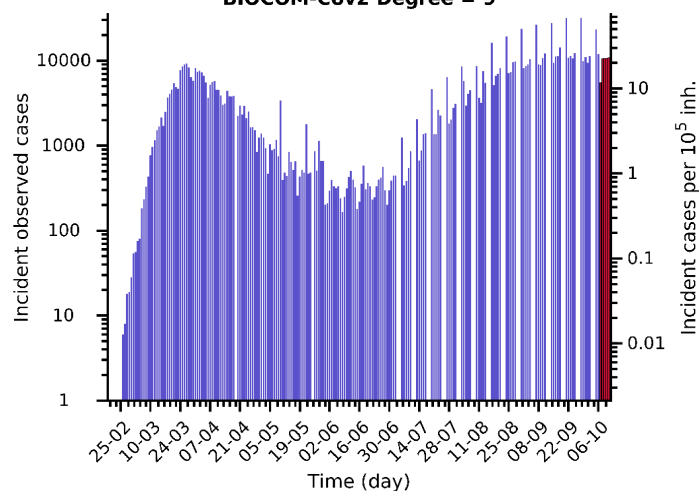
Day	Number of cases	95% Confidence Interval
07-10-2020	830896 (+5486)	[825410 - 930614]
09-10-2020	852070 (+10627)	[825410 - 956060]
11-10-2020	873561 (+10785)	[825410 - 987005]

Current indicators

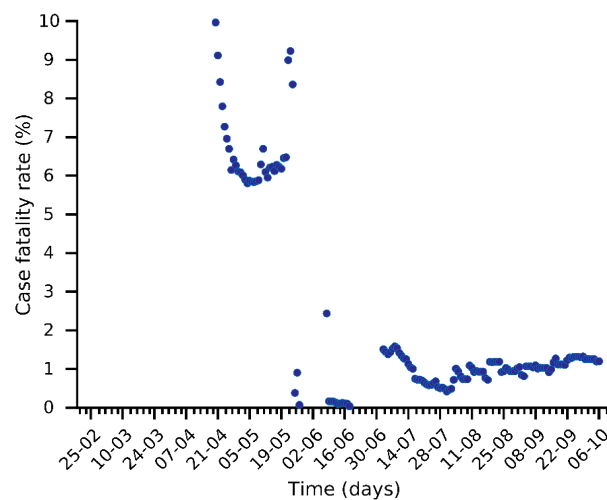
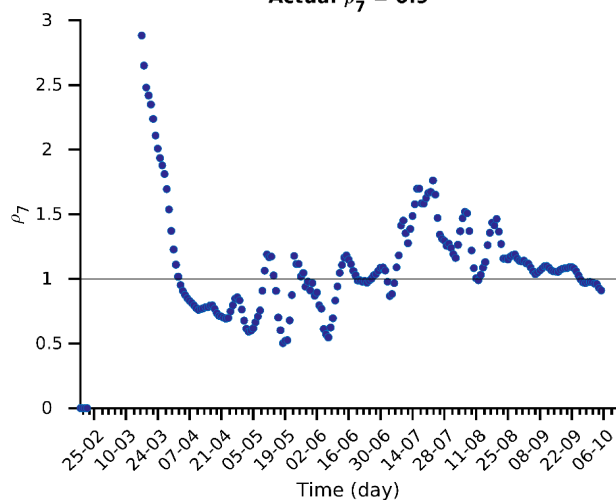
A ₁₄	EPG	CFR
304	277	1.20 %



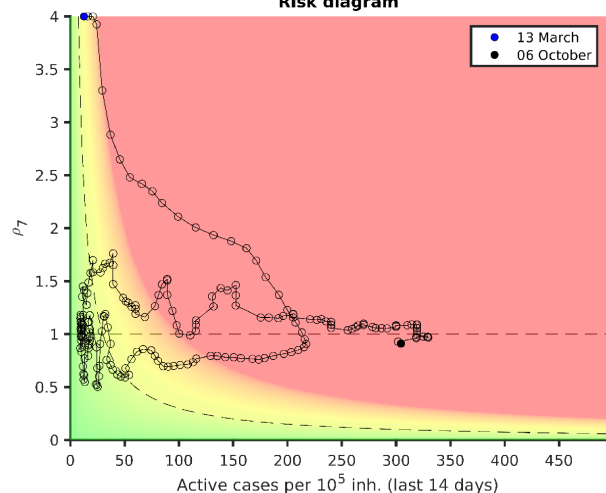
BIOCOM-Cov2 Degree = 9



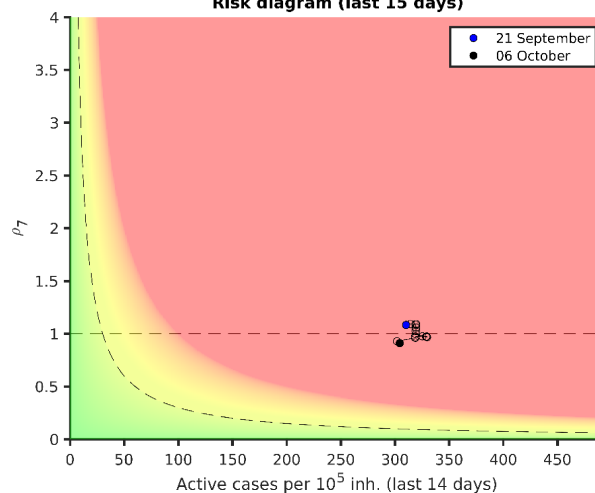
Actual $\rho_7 = 0.9$



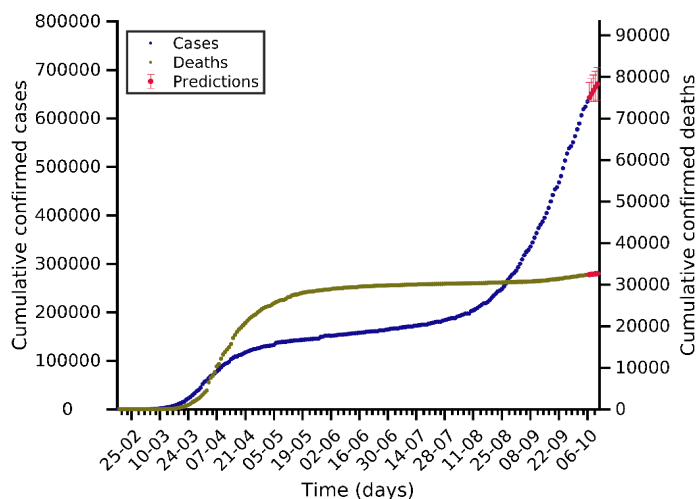
Risk diagram



Risk diagram (last 15 days)



France 06-10-2020. Pop: 65.3M. Cumulative incidence: 972/10⁵

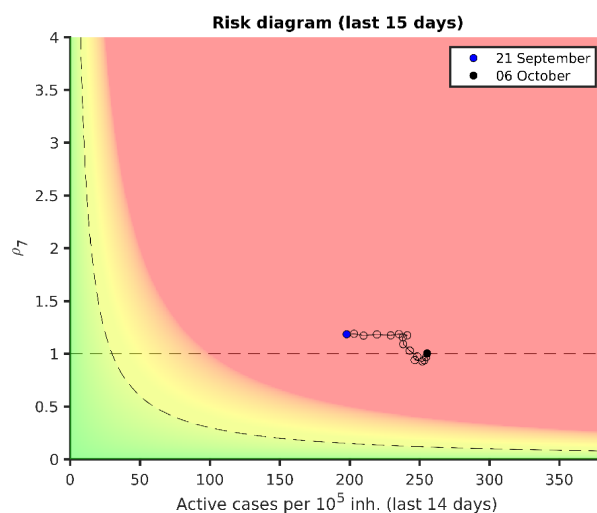
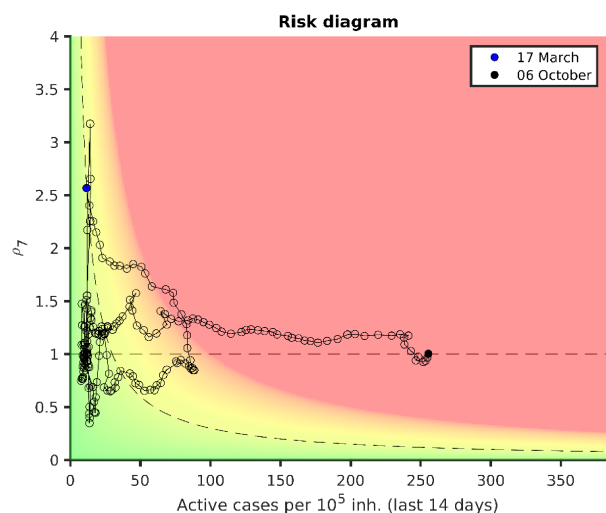
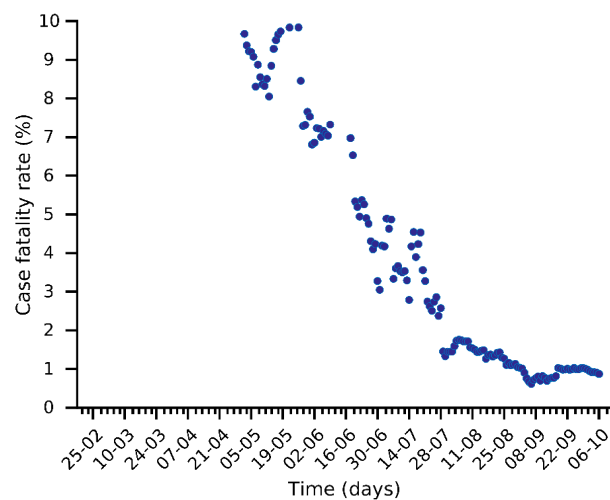
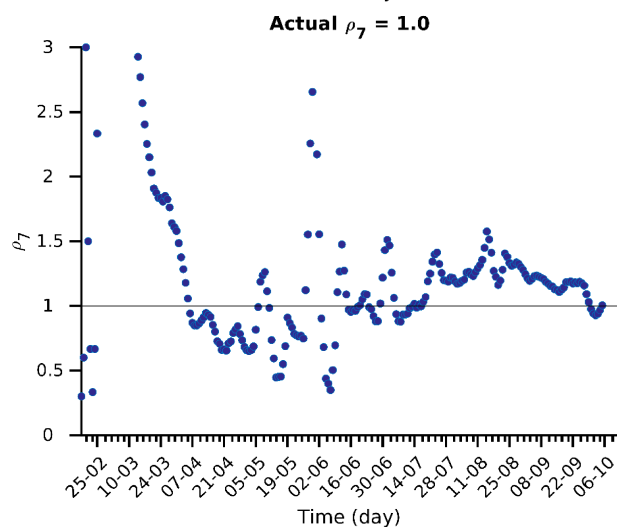
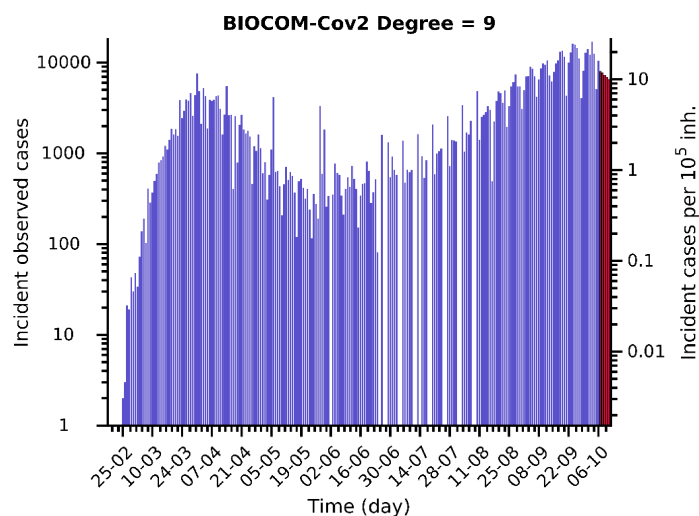
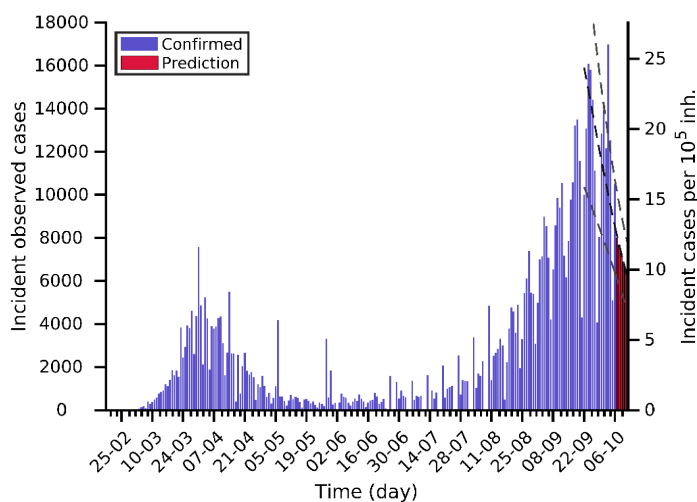


Predictions for next days

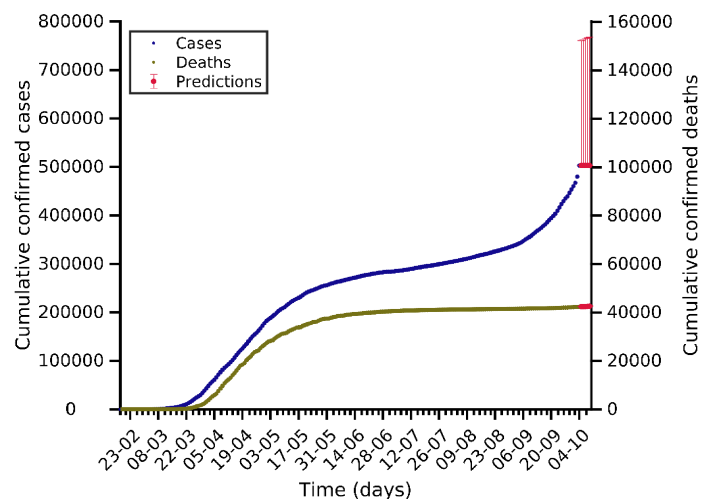
Day	Number of cases	95% Confidence Interval
07-10-2020	642745 (+7982)	[634763 - 674041]
09-10-2020	657704 (+7273)	[634763 - 689849]
11-10-2020	671078 (+6497)	[637392 - 704764]

Current indicators

A ₁₄	EPG	CFR
255	256	0.87 %



UK 04-10-2020. Pop: 67.9M. Cumulative incidence: 741/10⁵

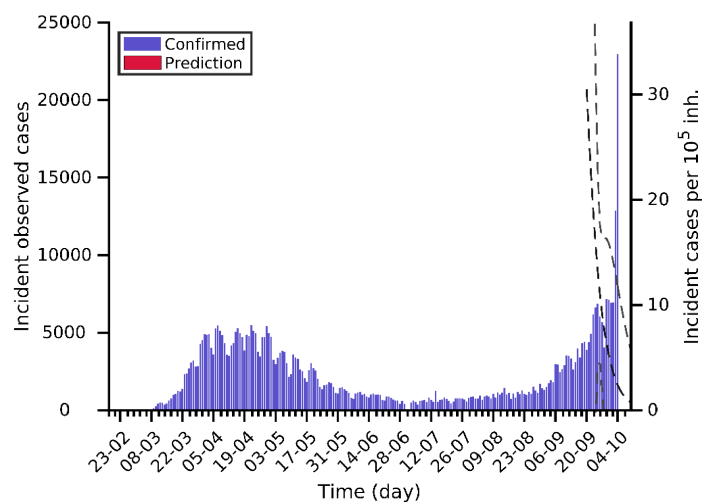


Predictions for next days

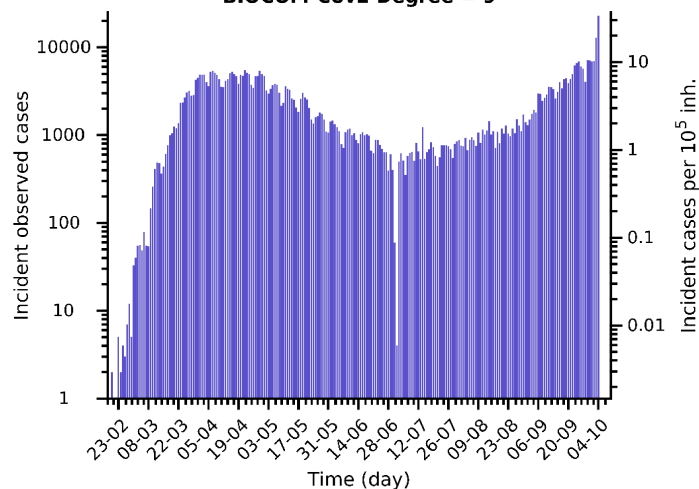
Day	Number of cases	95% Confidence Interval
05-10-2020	502978 (+0)	[502978 - 760673]
07-10-2020	502978 (+0)	[502978 - 764393]
09-10-2020	502978 (+0)	[502978 - 767733]

Current indicators

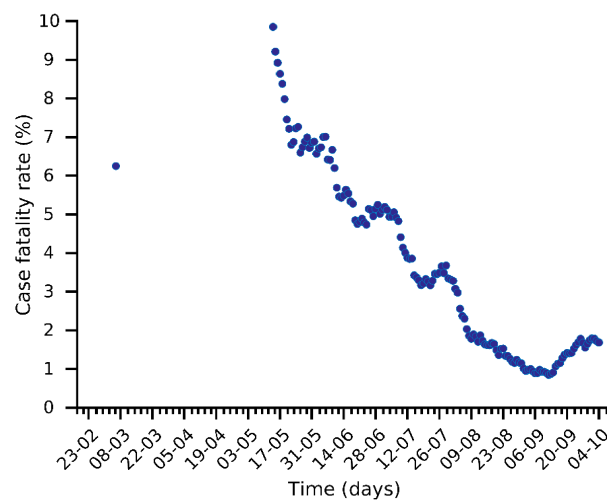
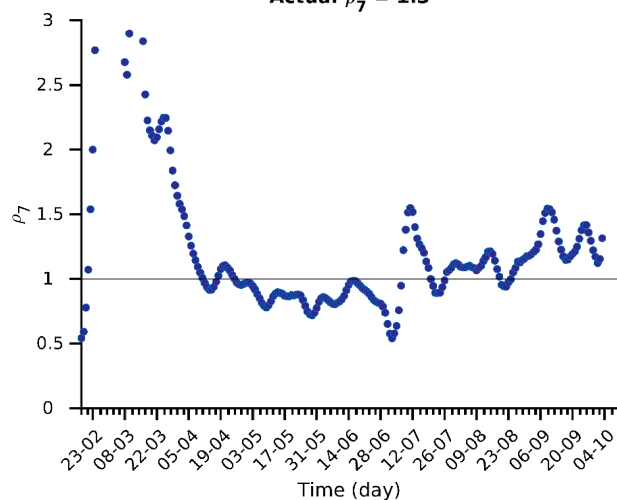
A ₁₄	EPG	CFR
160	211	1.68 %



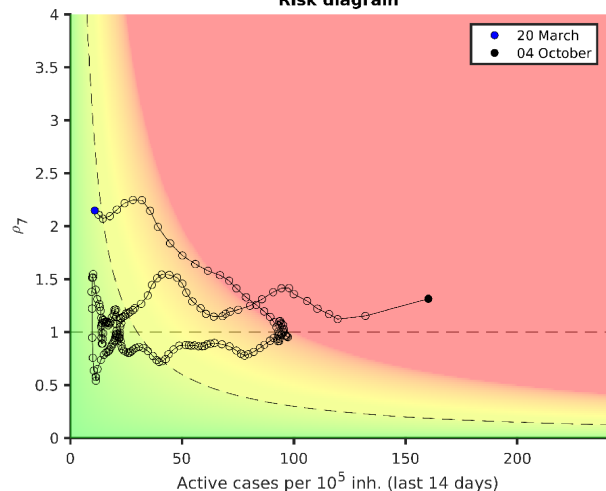
BIOCOM-Cov2 Degree = 9



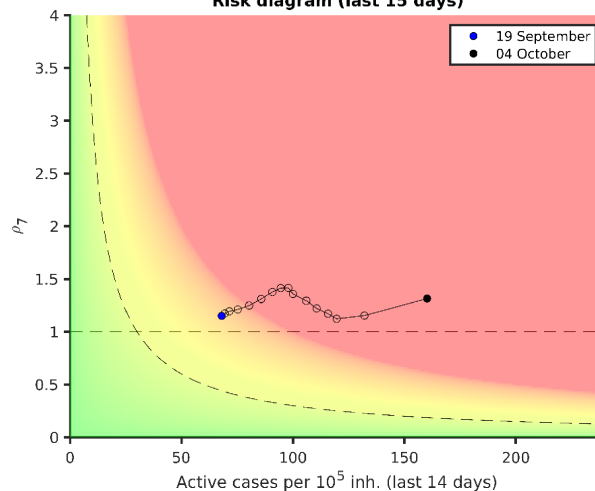
Actual $\rho_7 = 1.3$



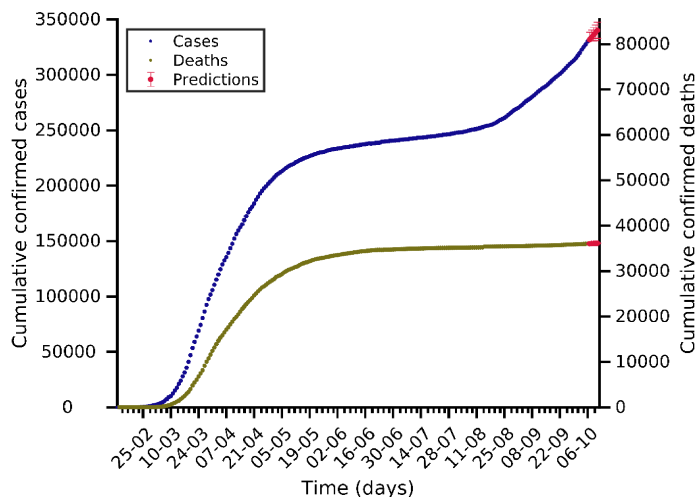
Risk diagram



Risk diagram (last 15 days)



Italy 06-10-2020. Pop: 60.5M. Cumulative incidence: 546/10⁵

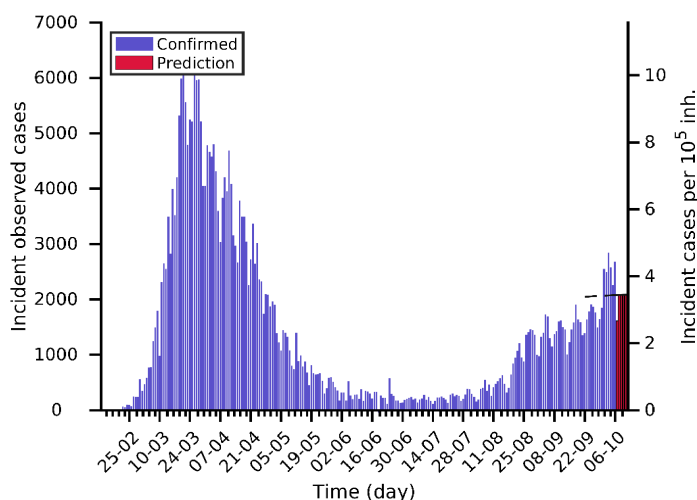


Predictions for next days

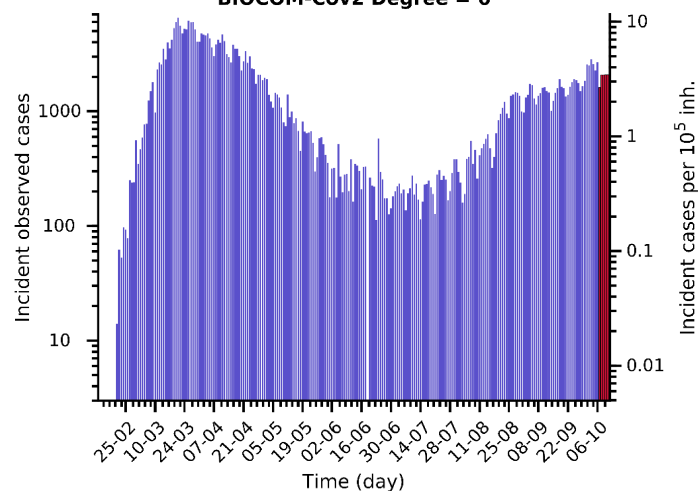
Day	Number of cases	95% Confidence Interval
07-10-2020	331874 (+1611)	[330263 - 338397]
09-10-2020	336037 (+2082)	[330263 - 342819]
11-10-2020	340206 (+2085)	[332867 - 347544]

Current indicators

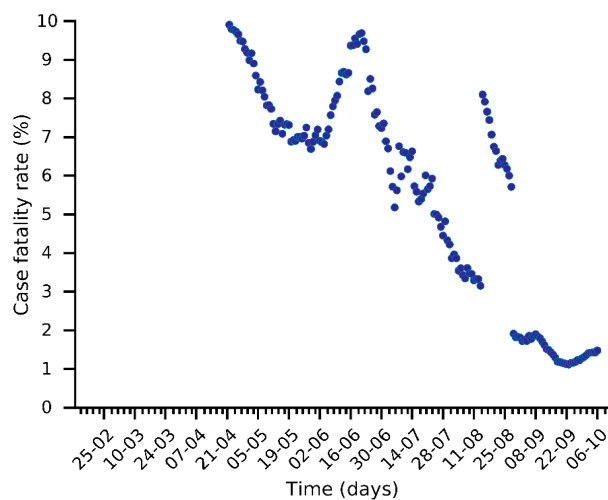
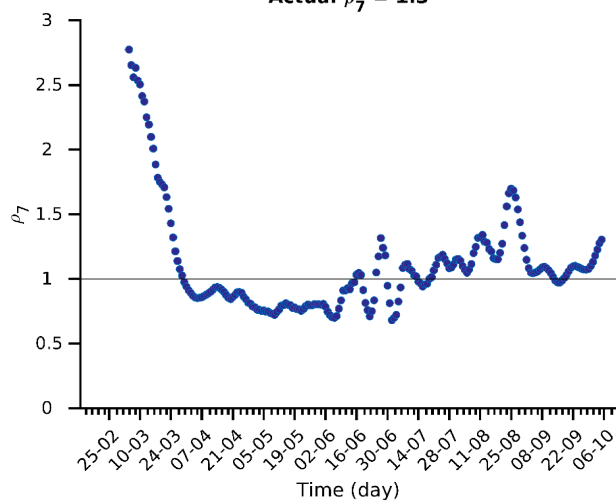
A ₁₄	EPG	CFR
49	63	1.47 %



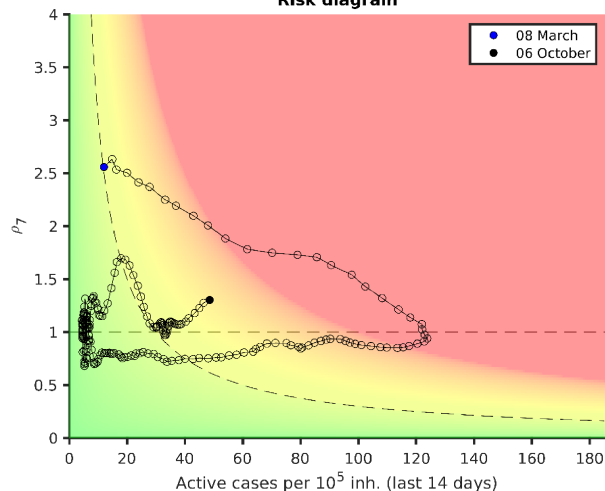
BIOCOM-Cov2 Degree = 6



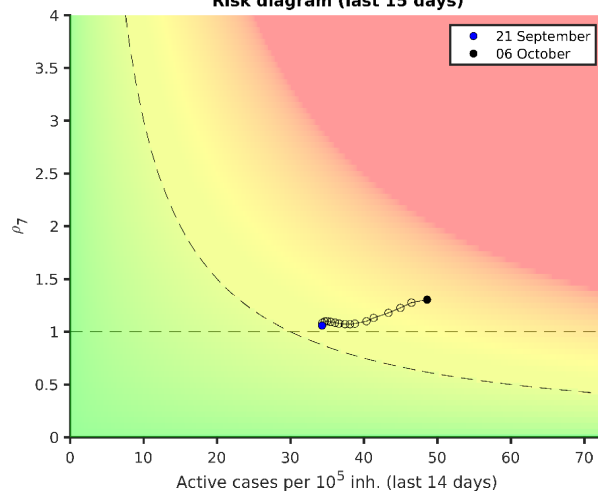
Actual $\rho_7 = 1.3$



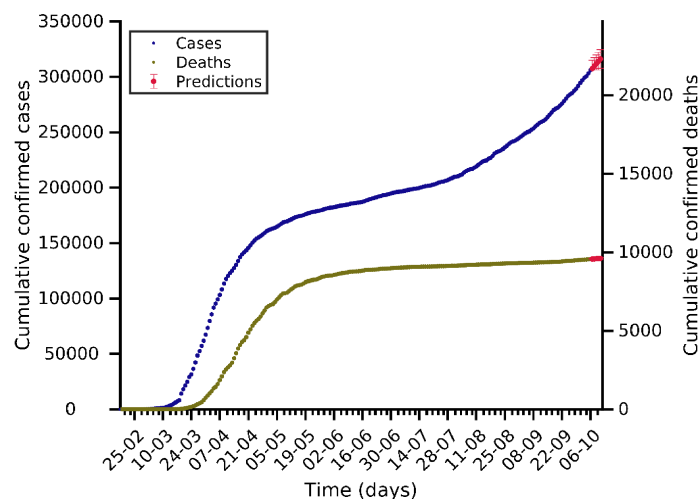
Risk diagram



Risk diagram (last 15 days)



Germany 06-10-2020. Pop: 83.8M. Cumulative incidence: 365/10⁵

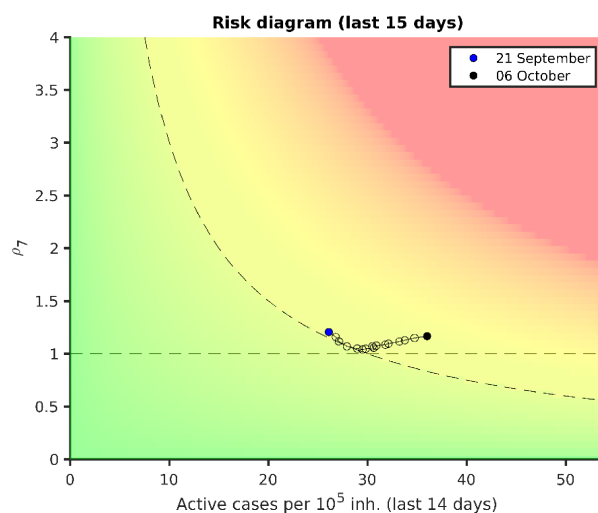
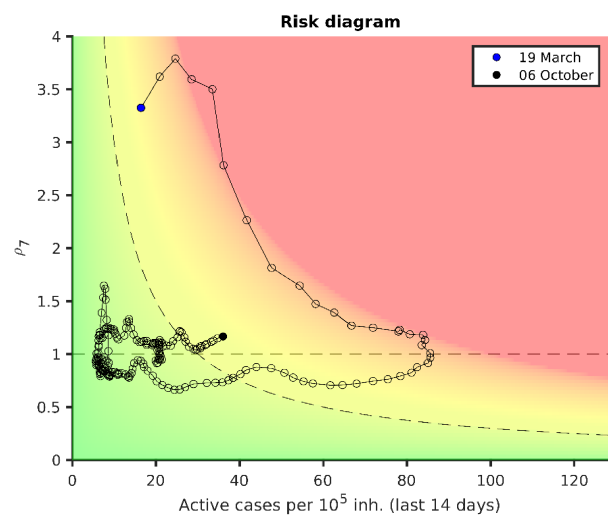
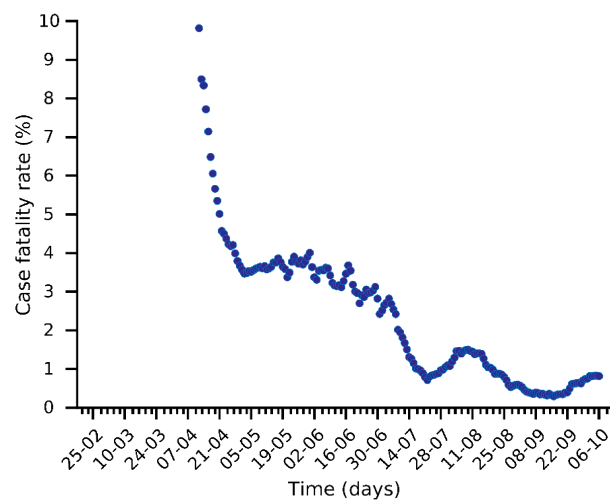
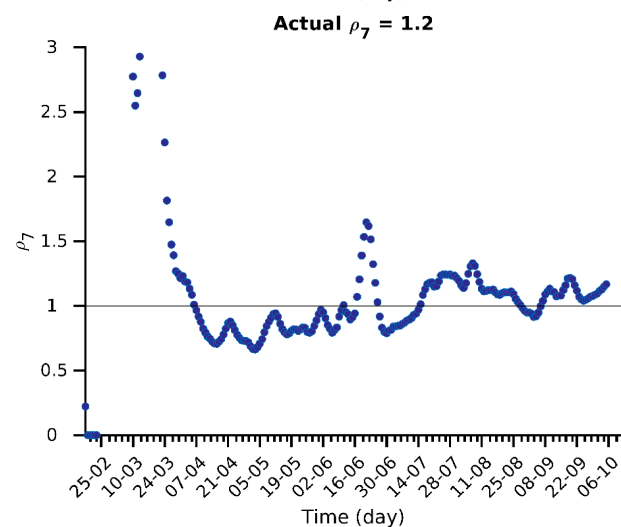
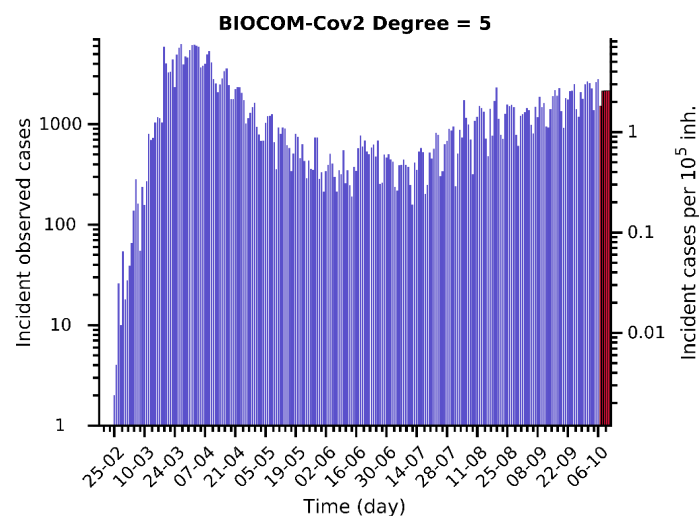
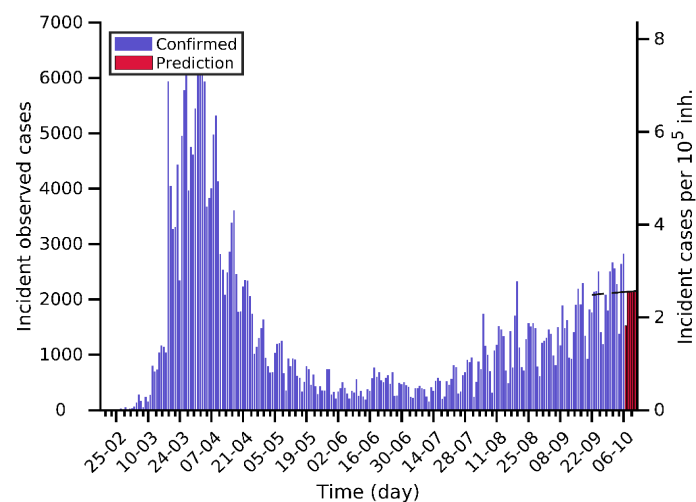


Predictions for next days

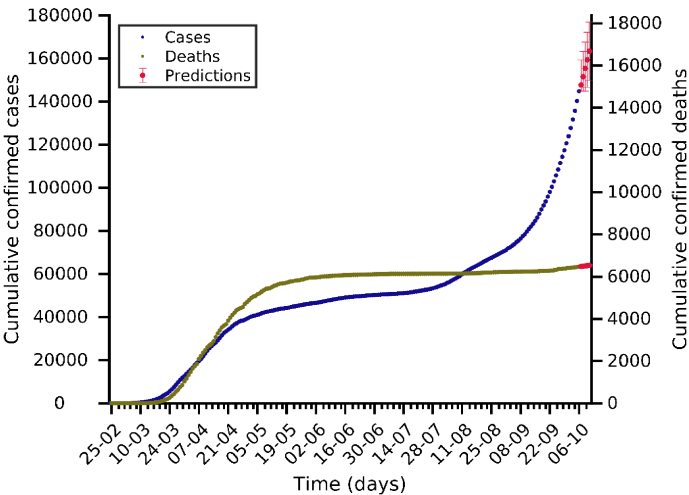
Day	Number of cases	95% Confidence Interval
07-10-2020	307613 (+1527)	[306086 - 315117]
09-10-2020	311896 (+2143)	[306086 - 319701]
11-10-2020	316190 (+2149)	[307738 - 324643]

Current indicators

A ₁₄	EPG	CFR
36	42	0.81 %

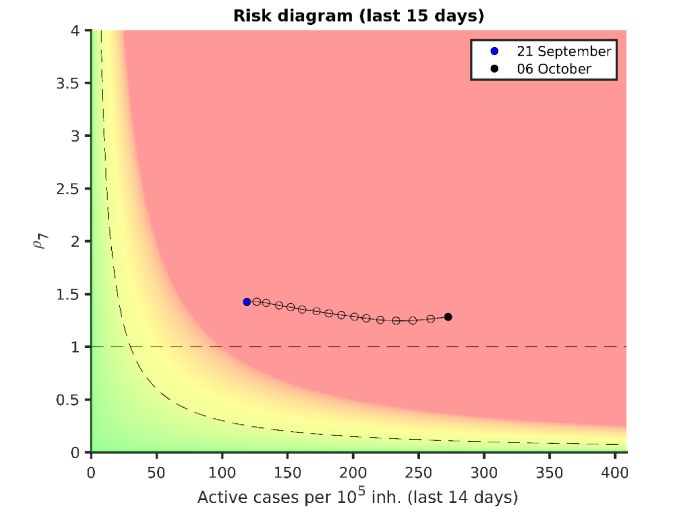
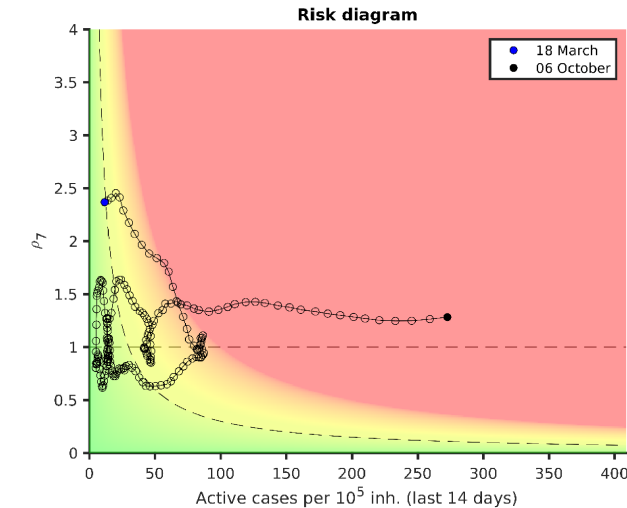
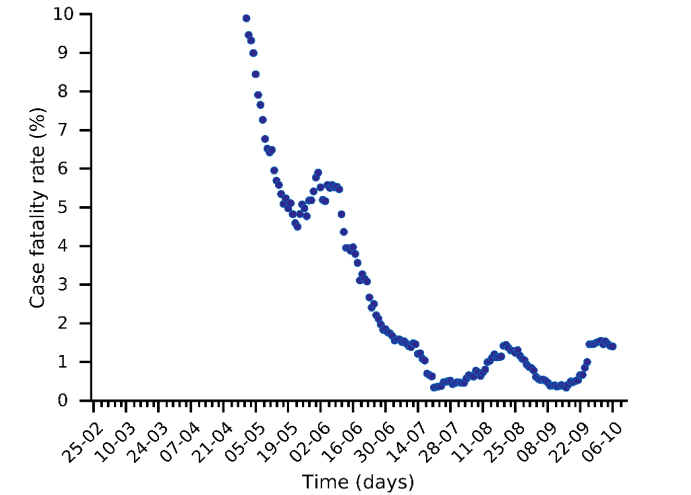
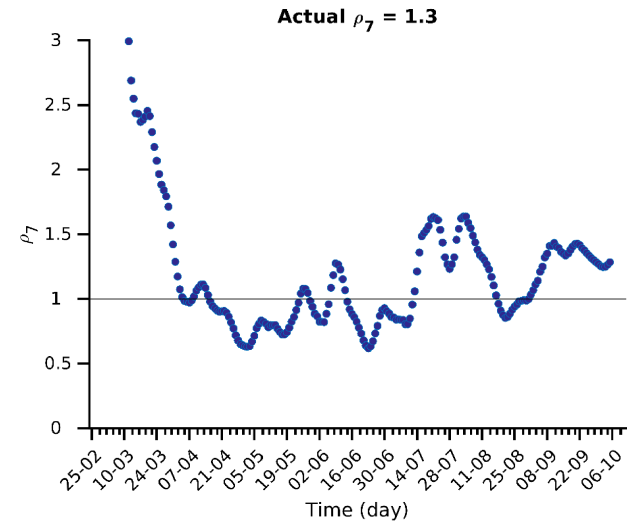
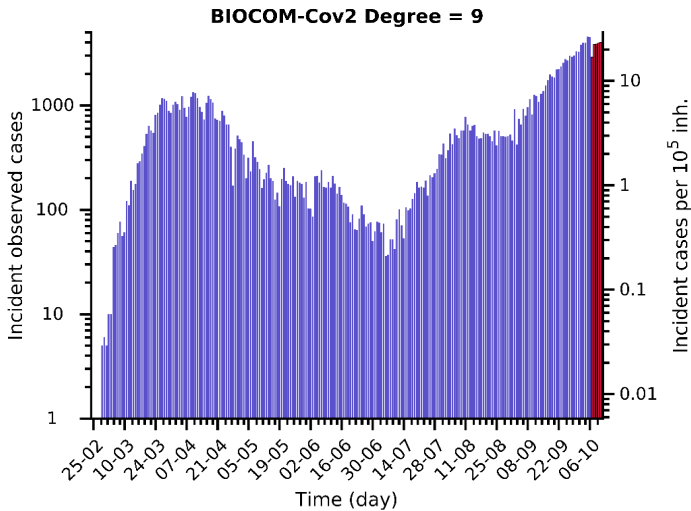
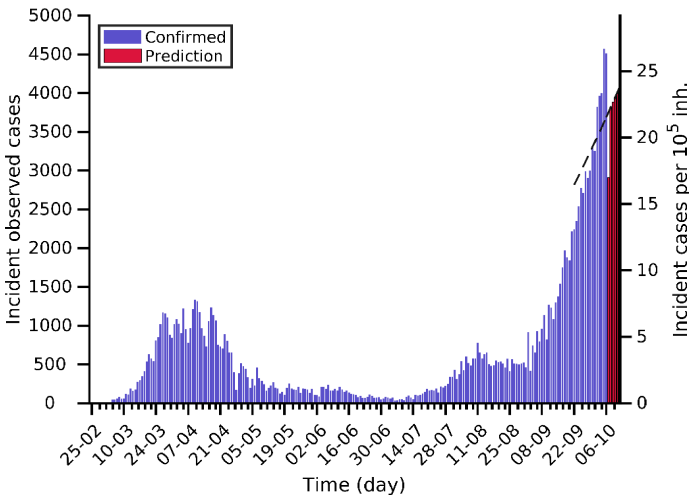


Netherlands 06-10-2020. Pop: 17.1M. Cumulative incidence: 845/10⁵

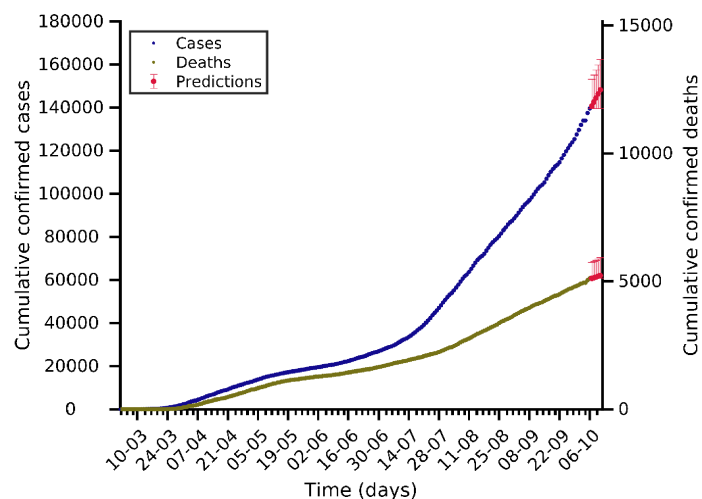


Predictions for next days		
Day	Number of cases	95% Confidence Interval
07-10-2020	147748 (+2910)	[144838 - 159374]
09-10-2020	155451 (+3885)	[144838 - 167639]
11-10-2020	163420 (+4018)	[149931 - 176909]

Current indicators		
A ₁₄	EPG	CFR
273	350	1.40 %



Romania 06-10-2020. Pop: 19.2M. Cumulative incidence: 726/10⁵

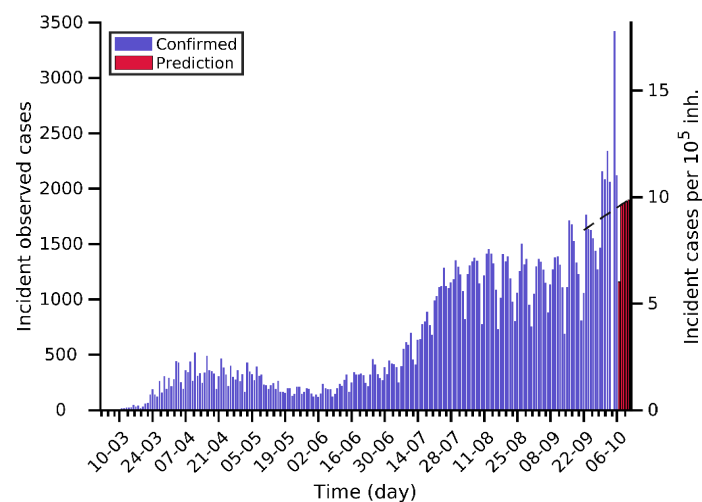


Predictions for next days

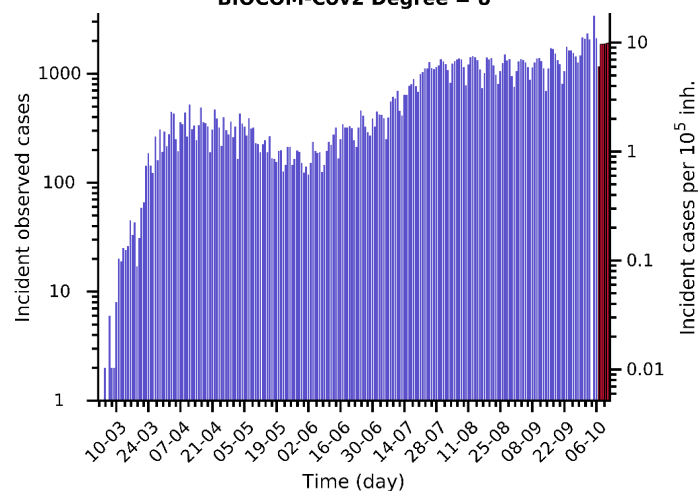
Day	Number of cases	95% Confidence Interval
07-10-2020	140769 (+1157)	[139612 - 153134]
09-10-2020	144496 (+1871)	[139612 - 157393]
11-10-2020	148280 (+1899)	[139612 - 162354]

Current indicators

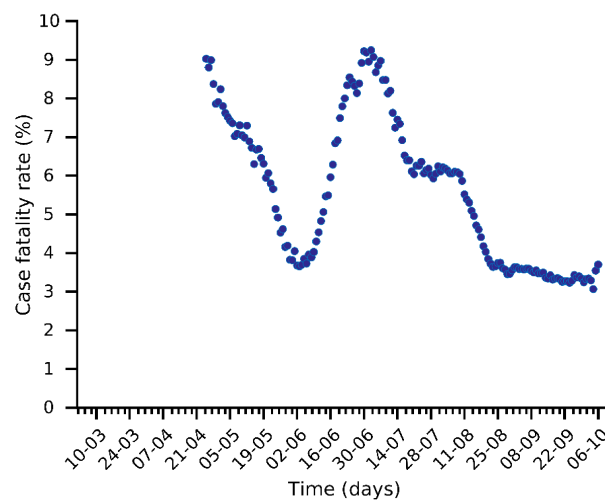
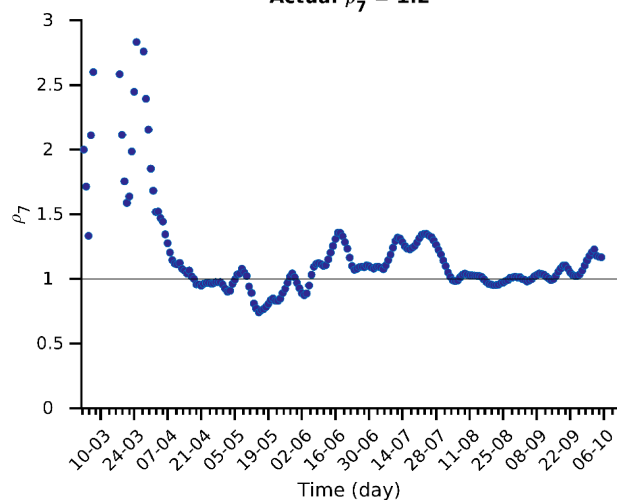
A ₁₄	EPG	CFR
130	151	3.70 %



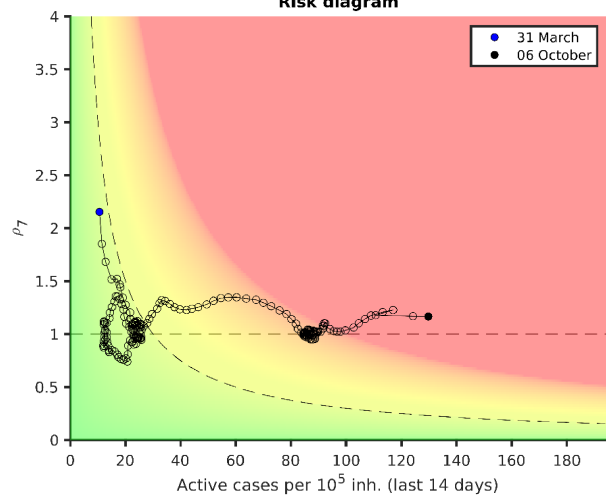
BIOCOM-Cov2 Degree = 8



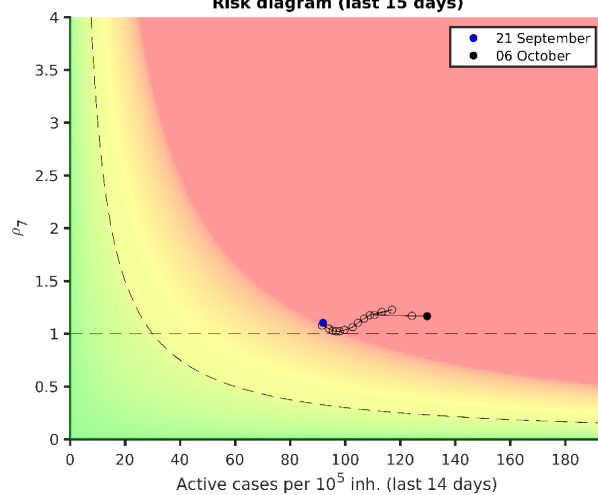
Actual $\rho_7 = 1.2$



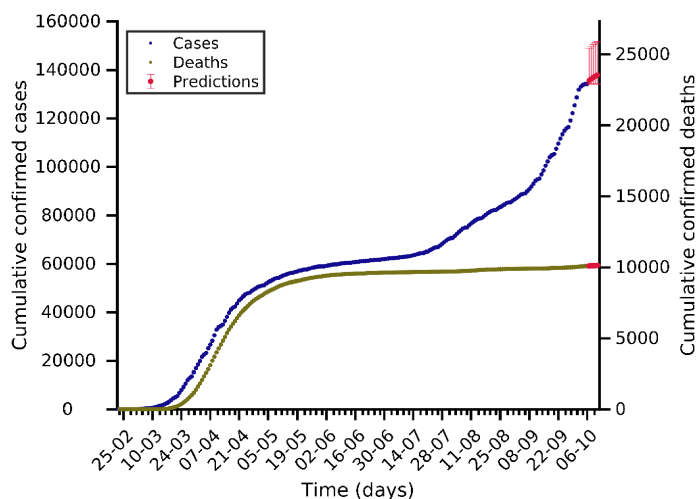
Risk diagram



Risk diagram (last 15 days)



Belgium 06-10-2020. Pop: 11.6M. Cumulative incidence: 1158/10⁵

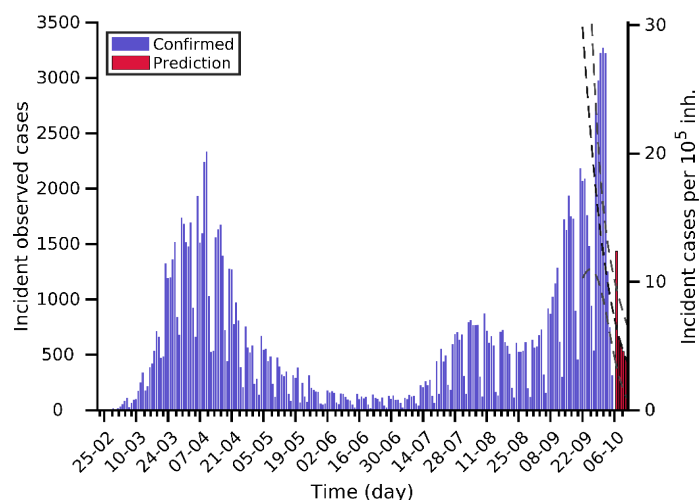


Predictions for next days

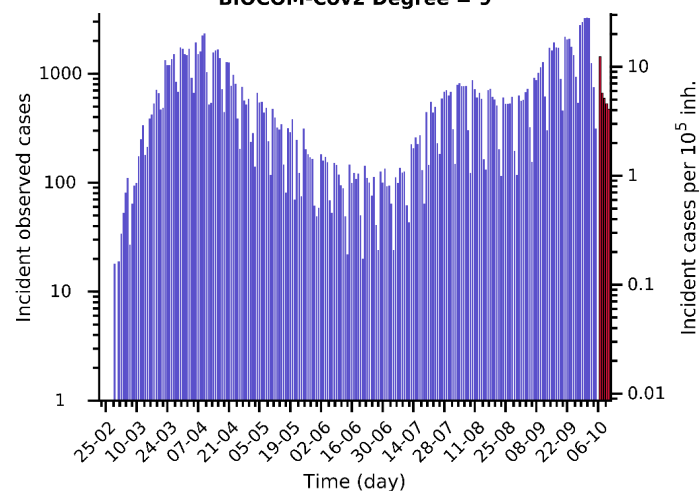
Day	Number of cases	95% Confidence Interval
07-10-2020	135633 (+1436)	[134197 - 148998]
09-10-2020	136892 (+594)	[134197 - 150469]
11-10-2020	137895 (+473)	[134197 - 151791]

Current indicators

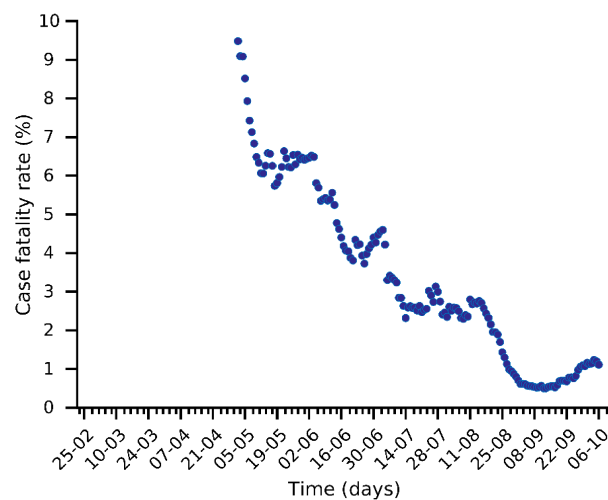
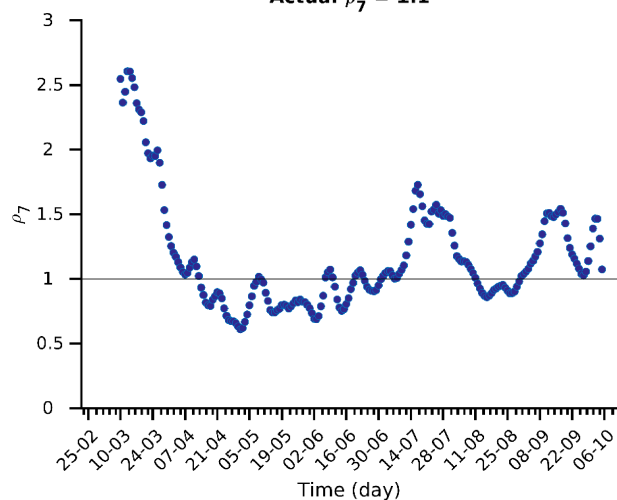
A ₁₄	EPG	CFR
212	228	1.11 %



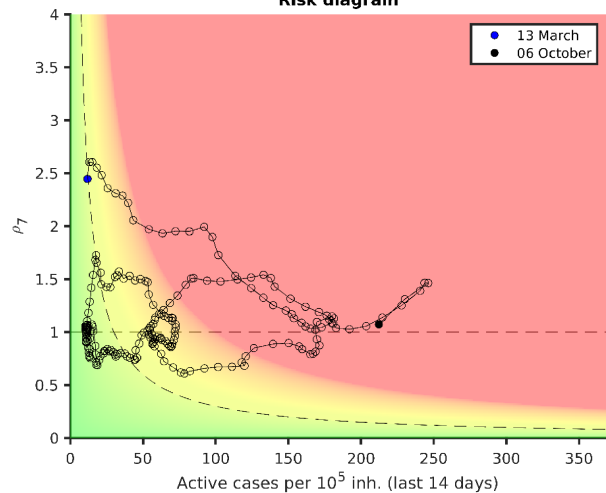
BIOCOM-Cov2 Degree = 9



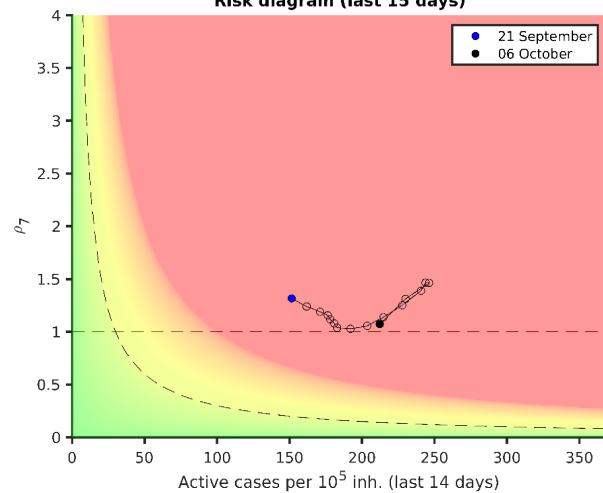
Actual $\rho_7 = 1.1$



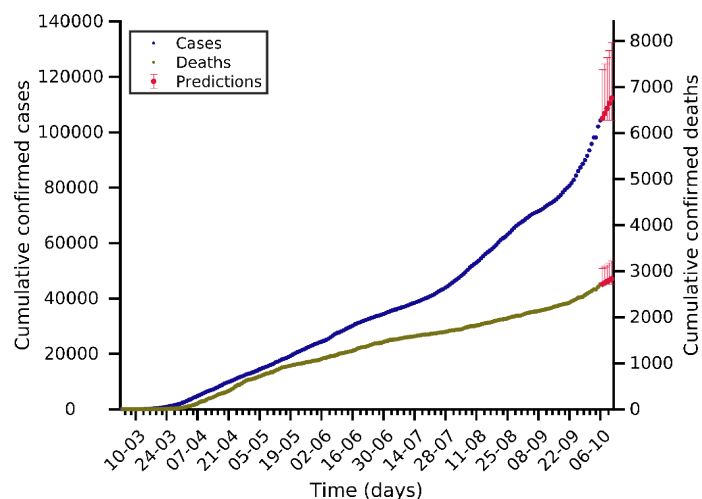
Risk diagram



Risk diagram (last 15 days)



Poland 06-10-2020. Pop: 37.8M. Cumulative incidence: 276/10⁵

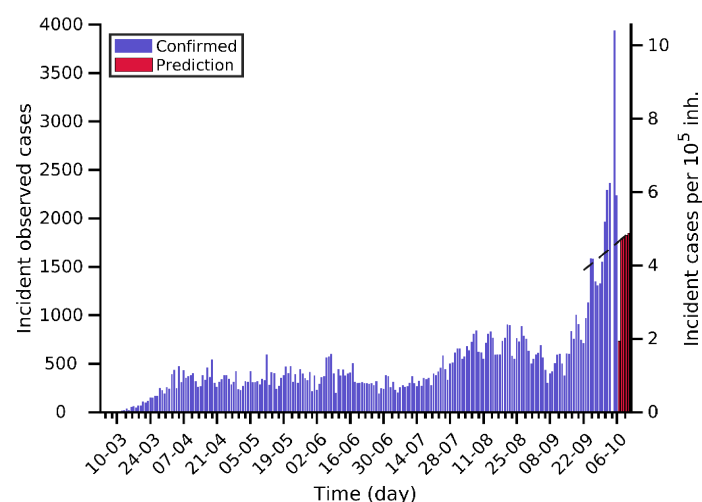


Predictions for next days

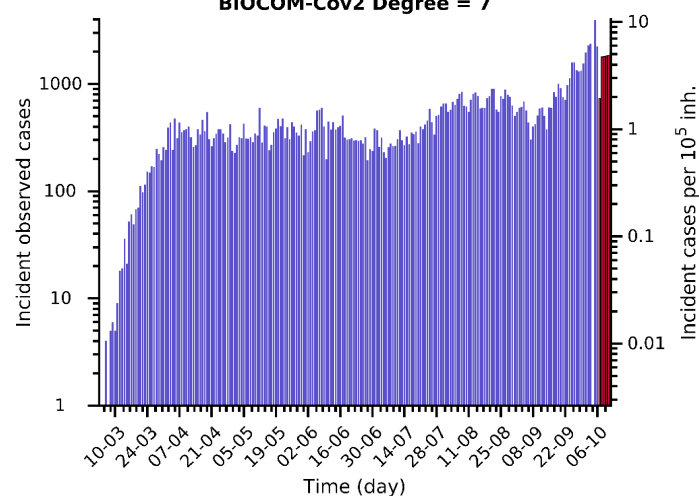
Day	Number of cases	95% Confidence Interval
07-10-2020	105049 (+733)	[104316 - 122546]
09-10-2020	108642 (+1807)	[104316 - 126925]
11-10-2020	112320 (+1849)	[104316 - 132373]

Current indicators

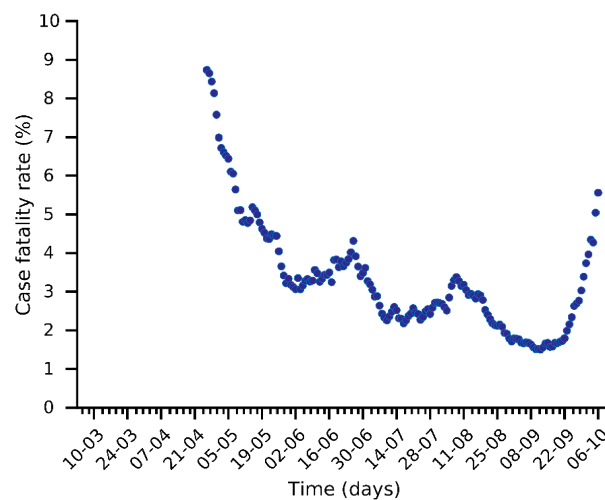
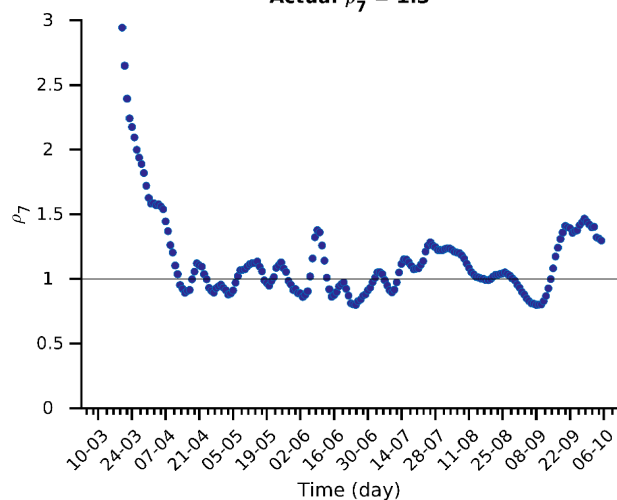
A ₁₄	EPG	CFR
62	81	5.56 %



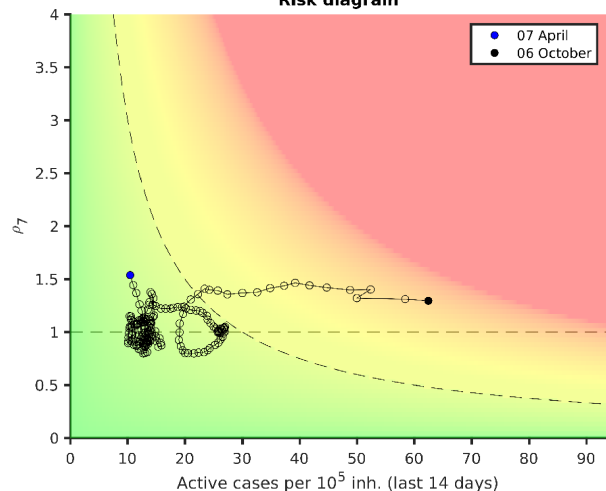
BIOCOM-Cov2 Degree = 7



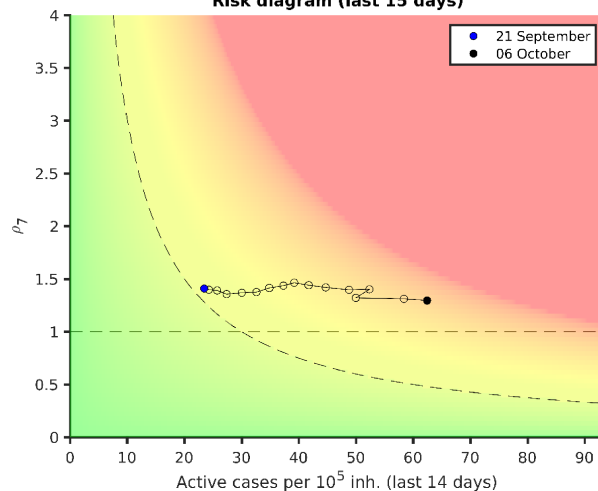
Actual $\rho_7 = 1.3$



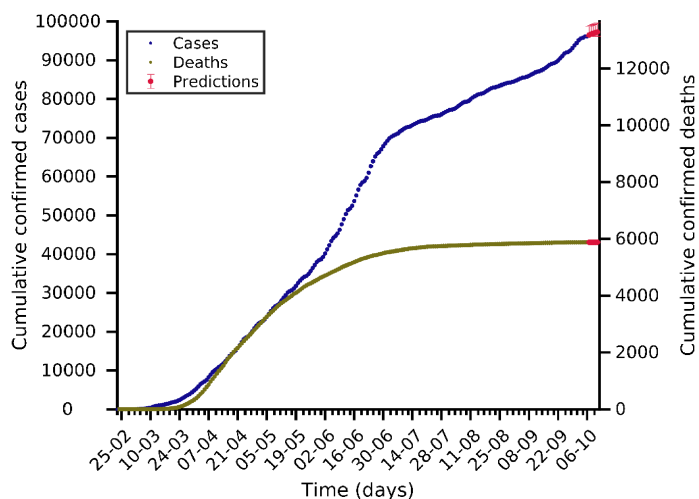
Risk diagram



Risk diagram (last 15 days)



Sweden 06-10-2020. Pop: 10.1M. Cumulative incidence: 952/10⁵

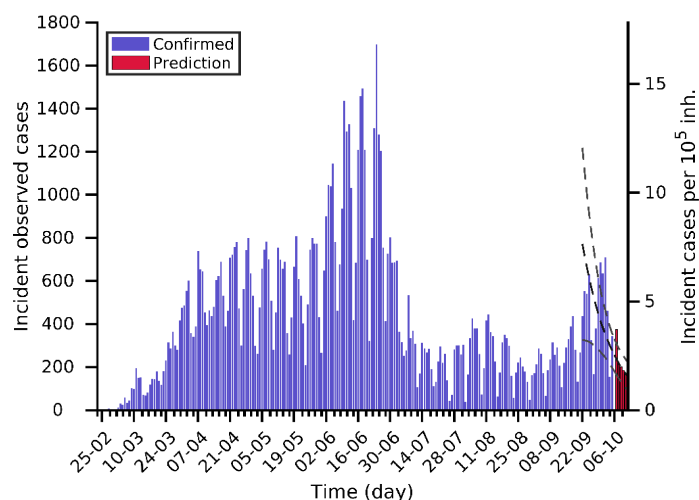


Predictions for next days

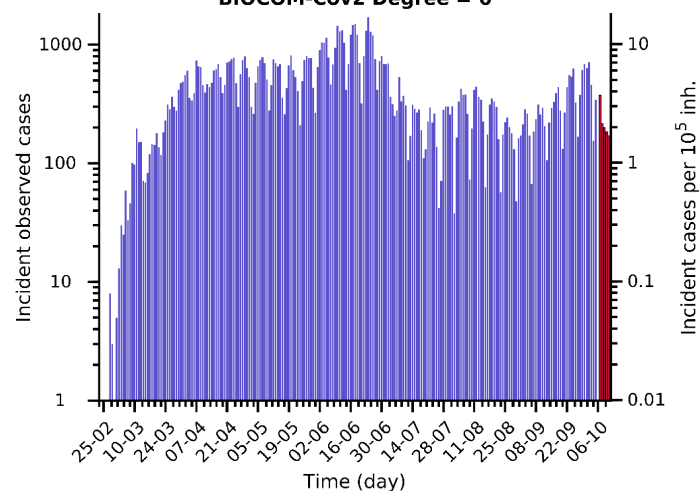
Day	Number of cases	95% Confidence Interval
07-10-2020	96519 (+374)	[96145 - 98722]
09-10-2020	96937 (+200)	[96145 - 99185]
11-10-2020	97292 (+170)	[96145 - 99612]

Current indicators

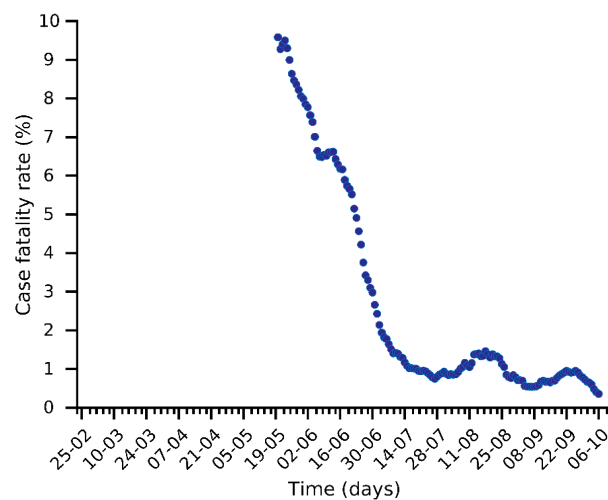
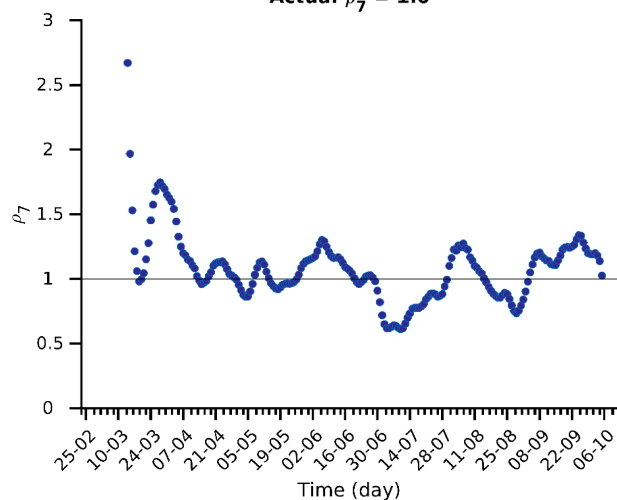
A ₁₄	EPG	CFR
61	63	0.35 %



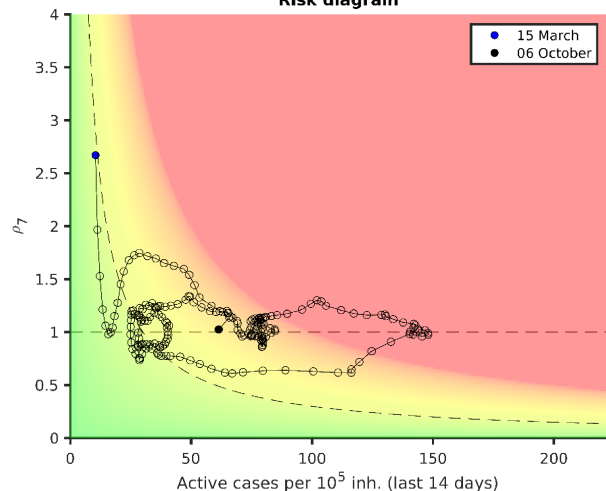
BIOCOM-Cov2 Degree = 6



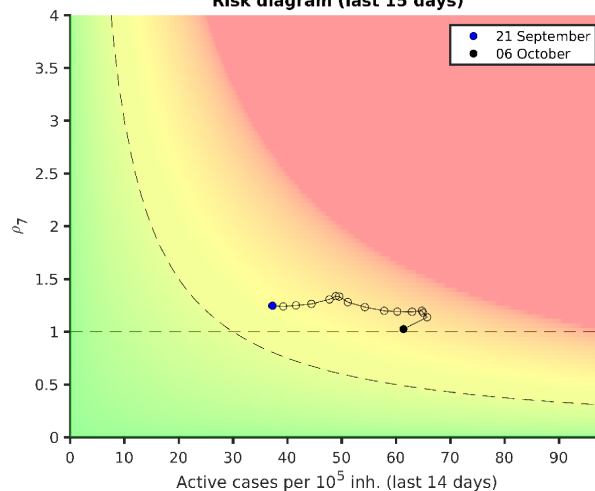
Actual $\rho_7 = 1.0$



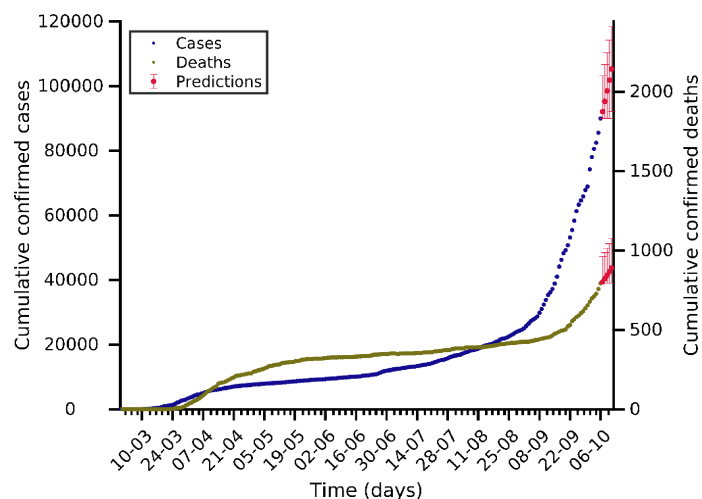
Risk diagram



Risk diagram (last 15 days)



Czech Rep 06-10-2020. Pop: 10.7M. Cumulative incidence: 841/10⁵

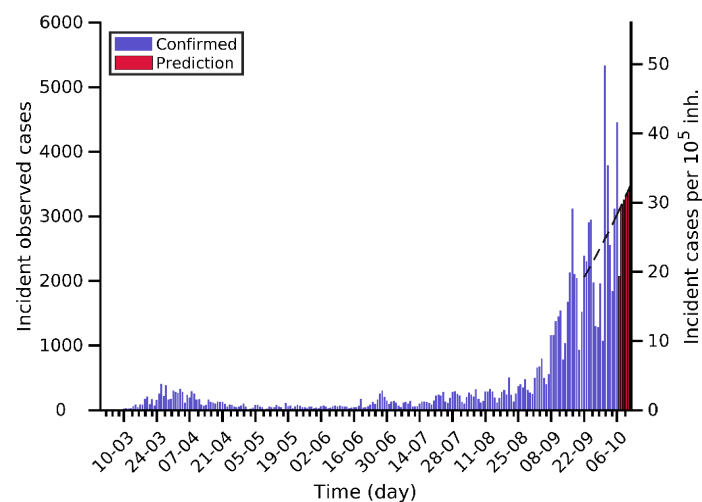


Predictions for next days

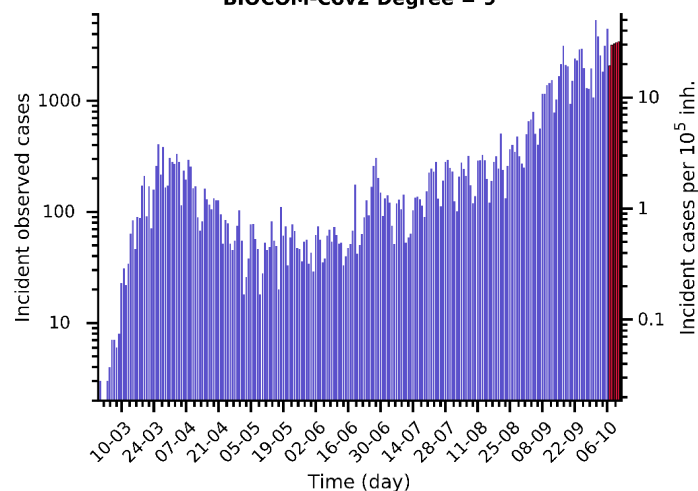
Day	Number of cases	95% Confidence Interval
07-10-2020	92094 (+2072)	[90022 - 103241]
09-10-2020	98527 (+3256)	[90022 - 110260]
11-10-2020	105276 (+3414)	[92147 - 118405]

Current indicators

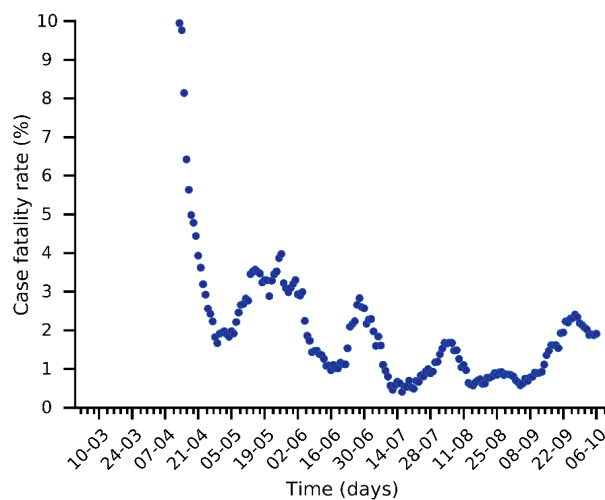
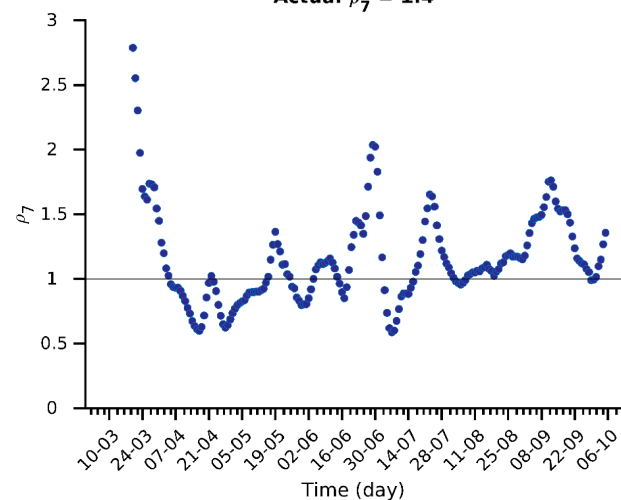
A ₁₄	EPG	CFR
344	467	1.91 %



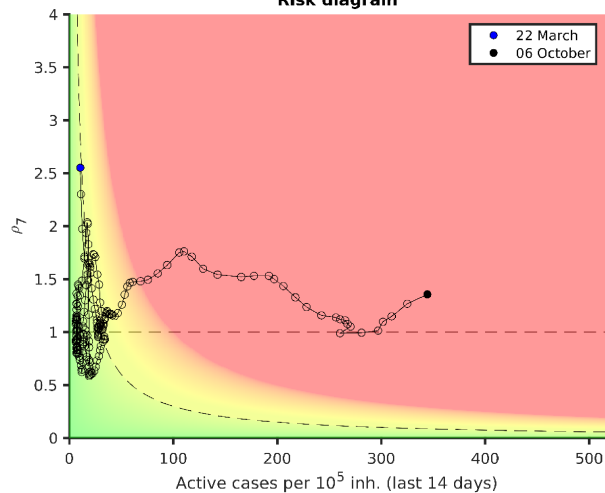
BIOCOM-Cov2 Degree = 9



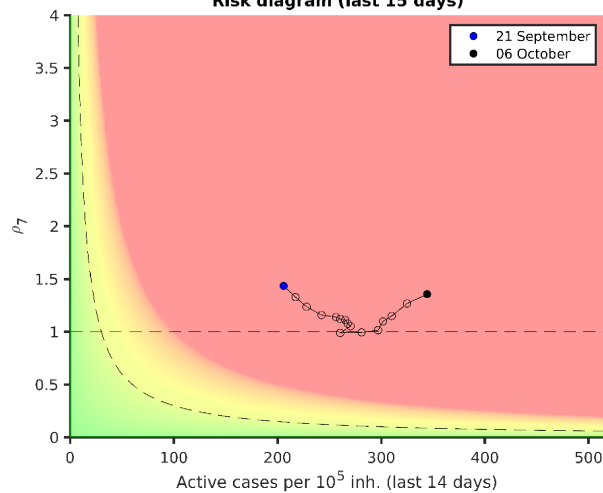
Actual $\rho_7 = 1.4$



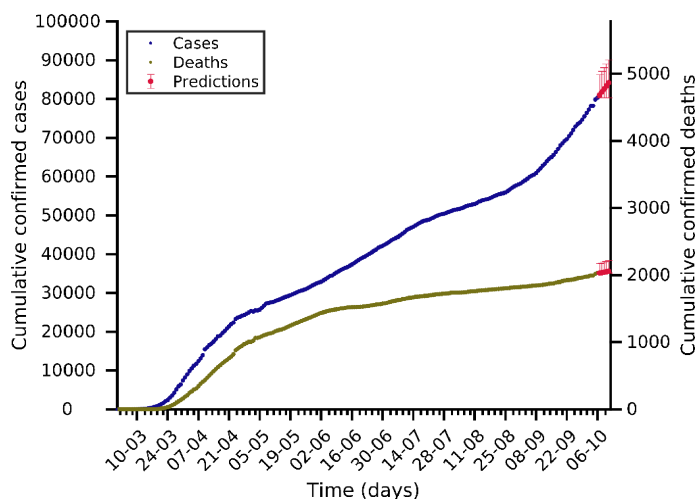
Risk diagram



Risk diagram (last 15 days)



Portugal 06-10-2020. Pop: 10.2M. Cumulative incidence: 788/10⁵

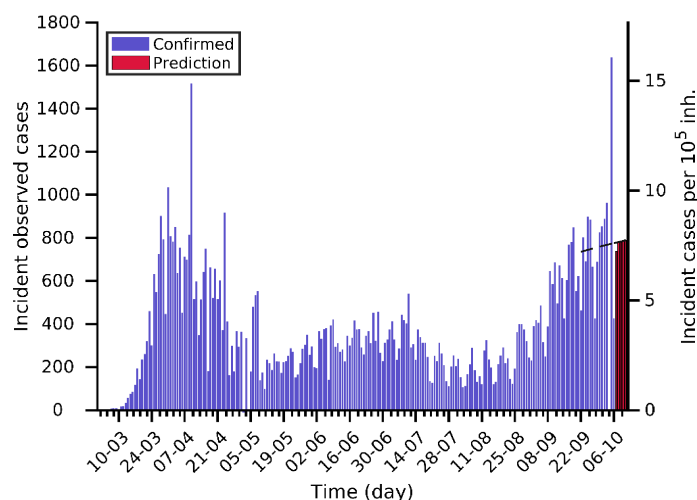


Predictions for next days

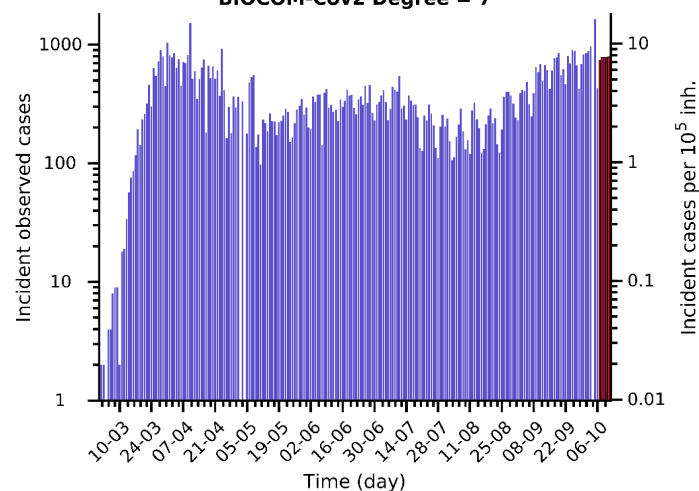
Day	Number of cases	95% Confidence Interval
07-10-2020	81050 (+738)	[80312 - 86276]
09-10-2020	82615 (+784)	[80312 - 88055]
11-10-2020	84190 (+789)	[80312 - 90097]

Current indicators

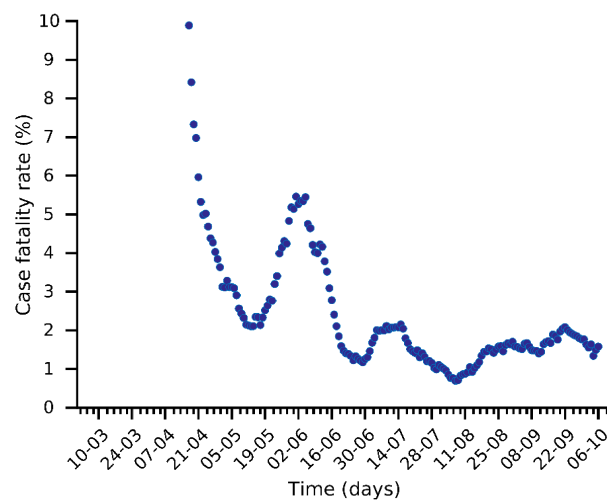
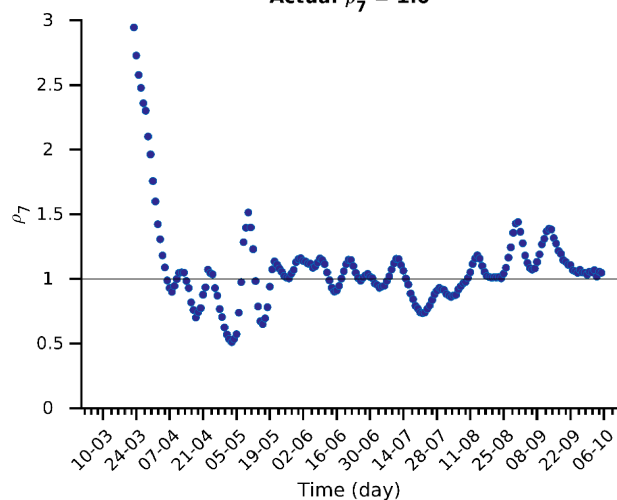
A ₁₄	EPG	CFR
104	109	1.58 %



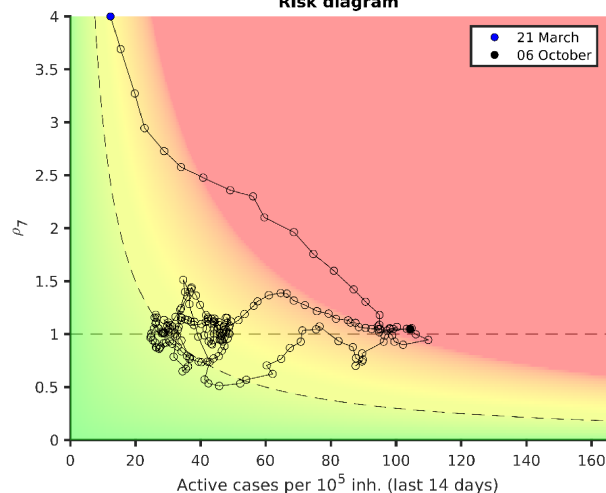
BIOCOM-Cov2 Degree = 7



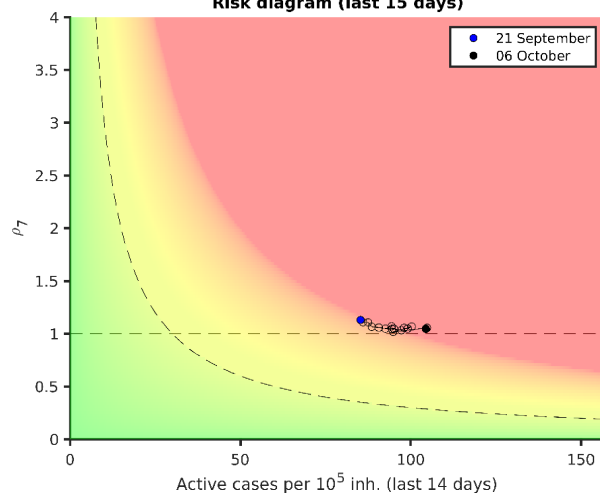
Actual $\rho_7 = 1.0$



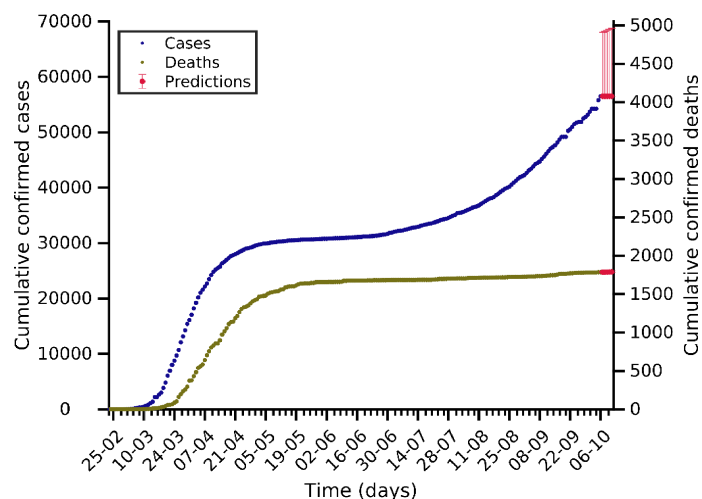
Risk diagram



Risk diagram (last 15 days)



Switzerland 06-10-2020. Pop: 8.7M. Cumulative incidence: 653/10⁵

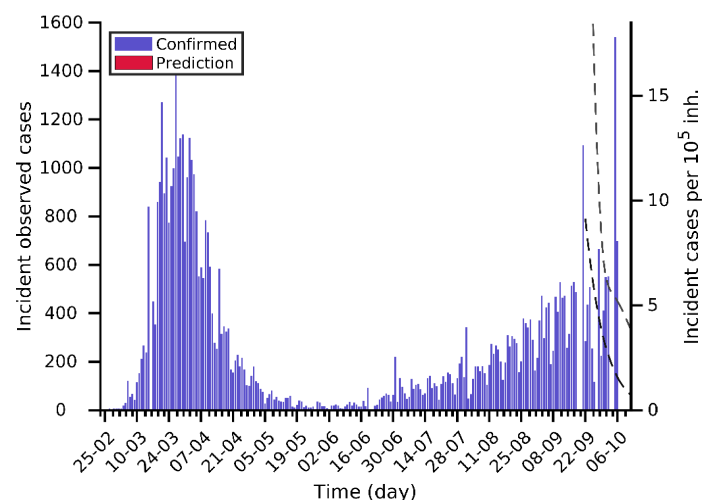


Predictions for next days

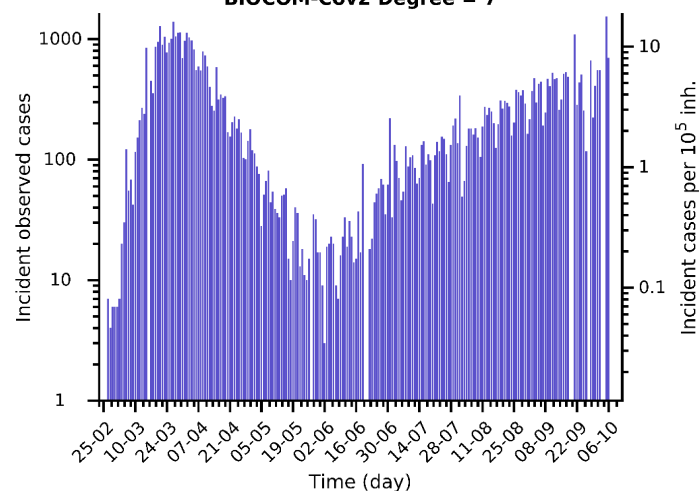
Day	Number of cases	95% Confidence Interval
07-10-2020	56502 (+0)	[56502 - 68035]
09-10-2020	56502 (+0)	[56502 - 68393]
11-10-2020	56502 (+0)	[56502 - 68771]

Current indicators

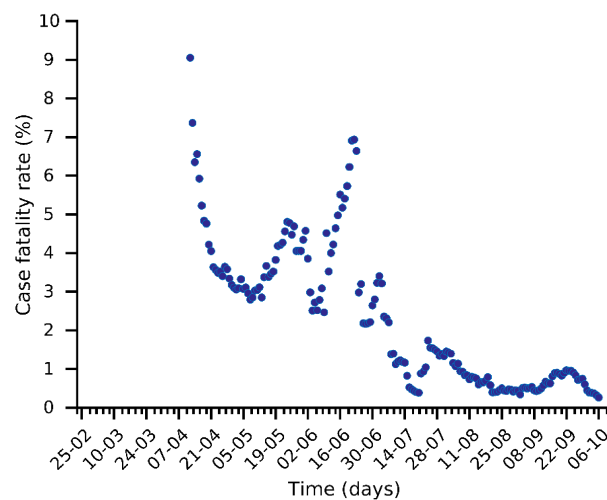
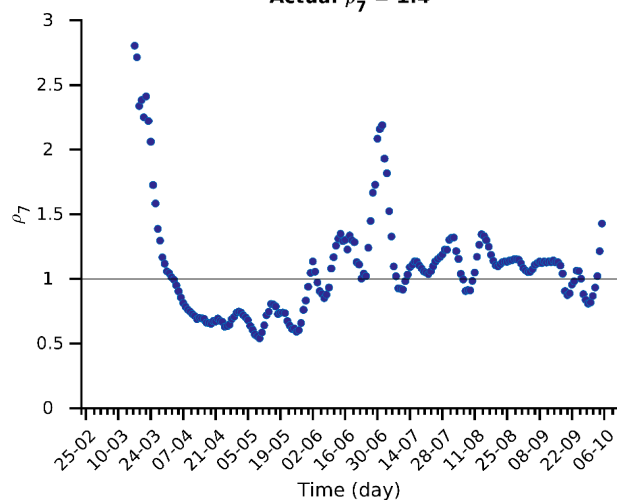
A ₁₄	EPG	CFR
69	98	0.26 %



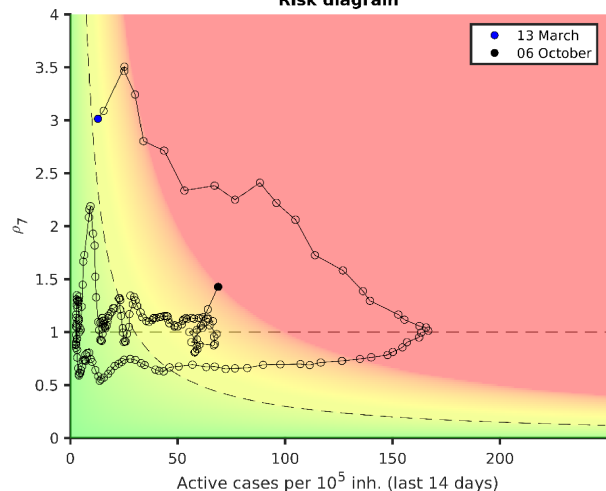
BIOCOM-Cov2 Degree = 7



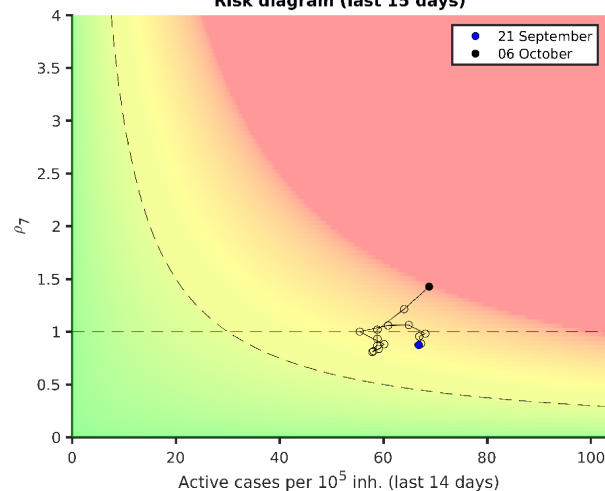
Actual $\rho_7 = 1.4$



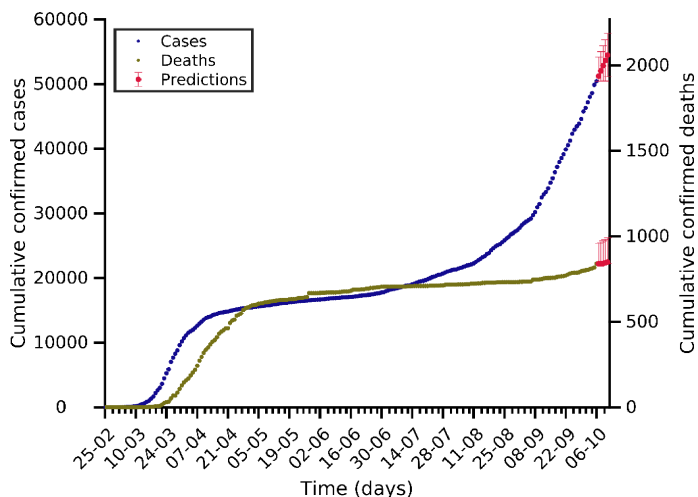
Risk diagram



Risk diagram (last 15 days)



Austria 06-10-2020. Pop: 9.0M. Cumulative incidence: 560/10⁵

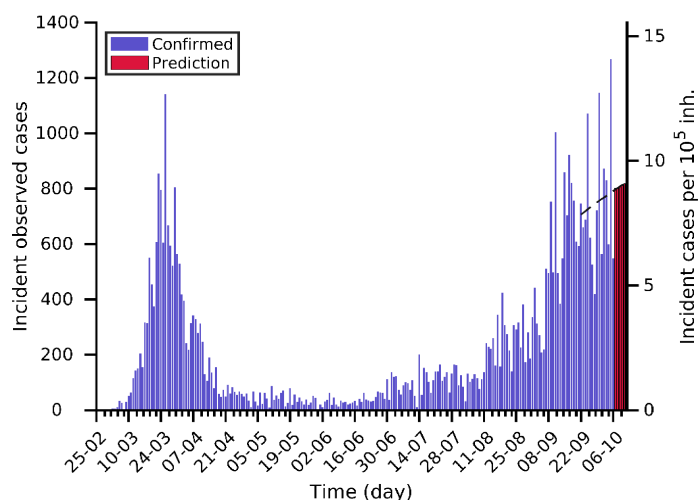


Predictions for next days

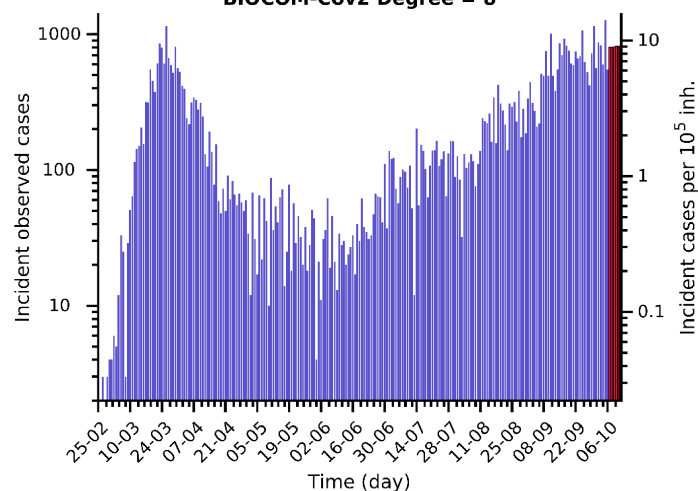
Day	Number of cases	95% Confidence Interval
07-10-2020	51238 (+803)	[50435 - 54180]
09-10-2020	52849 (+808)	[50435 - 55919]
11-10-2020	54481 (+819)	[51130 - 57833]

Current indicators

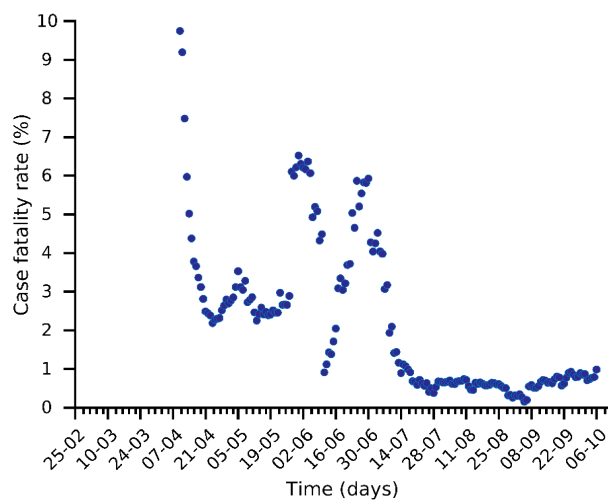
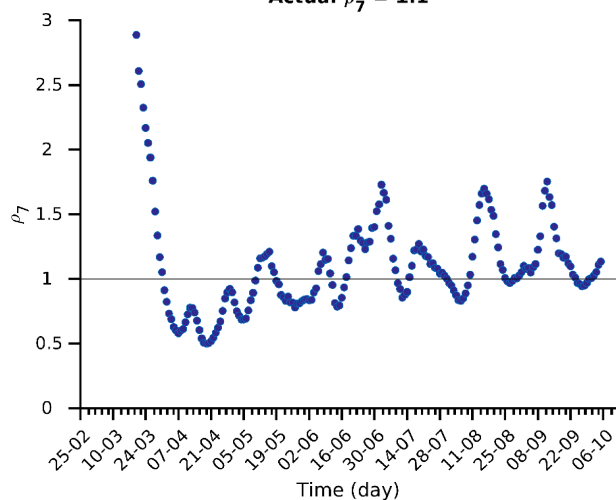
A ₁₄	EPG	CFR
117	133	0.99 %



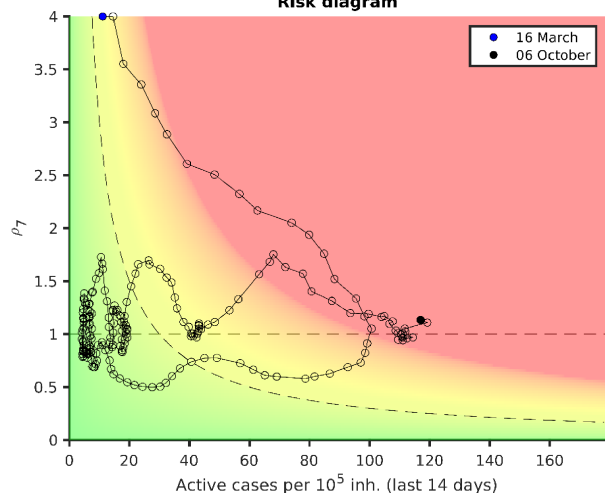
BIOCOM-Cov2 Degree = 8



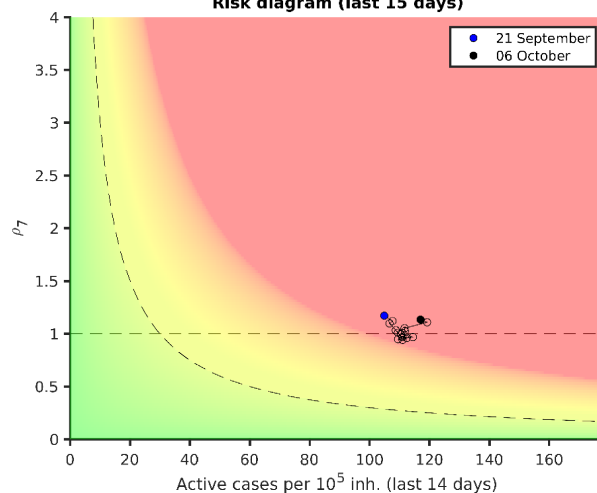
Actual $\rho_7 = 1.1$



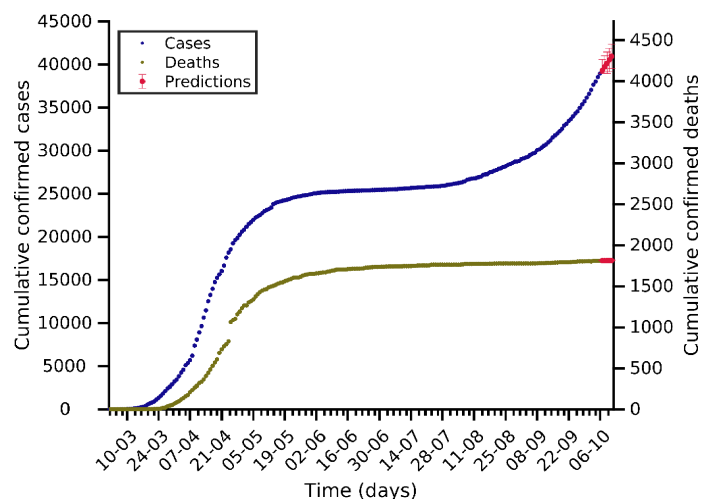
Risk diagram



Risk diagram (last 15 days)



Ireland 06-10-2020. Pop: 4.9M. Cumulative incidence: 789/10⁵

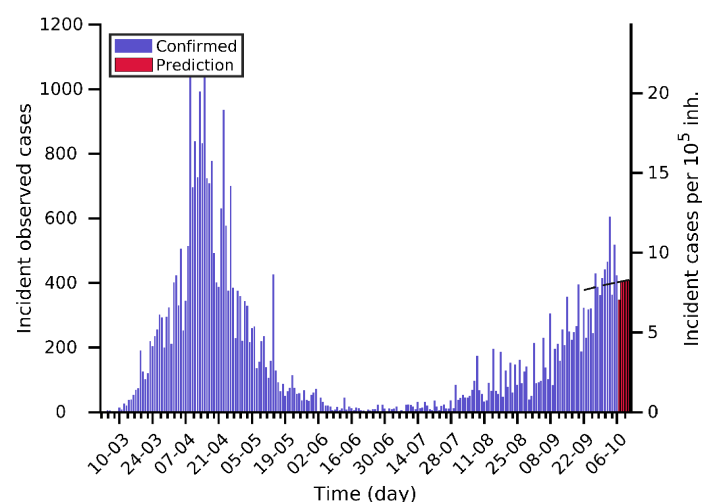


Predictions for next days

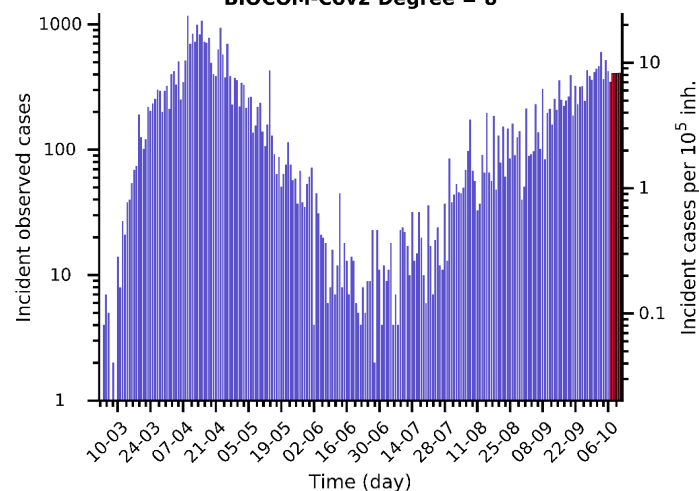
Day	Number of cases	95% Confidence Interval
07-10-2020	39323 (+348)	[38975 - 40583]
09-10-2020	40134 (+406)	[38975 - 41446]
11-10-2020	40951 (+409)	[39525 - 42376]

Current indicators

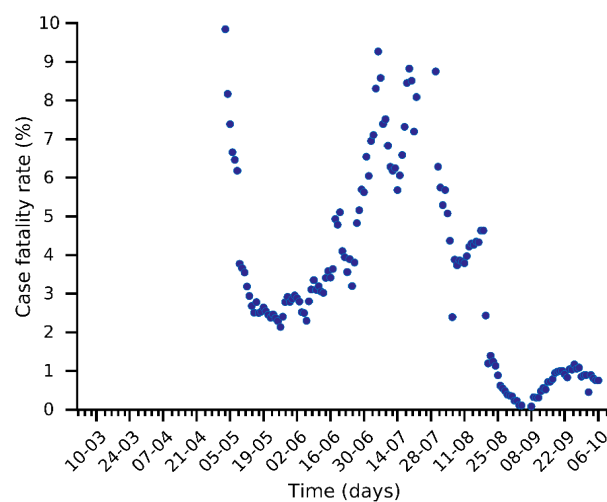
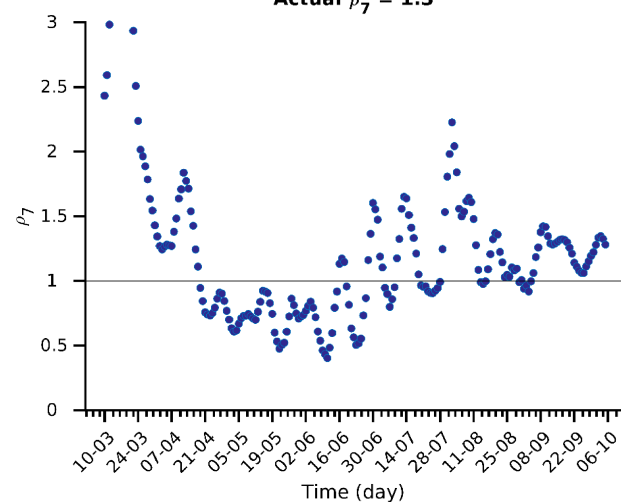
A ₁₄	EPG	CFR
112	143	0.75 %



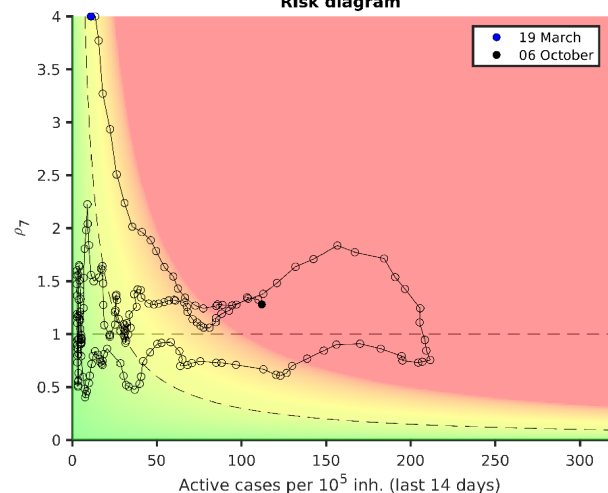
BIOCOM-Cov2 Degree = 8



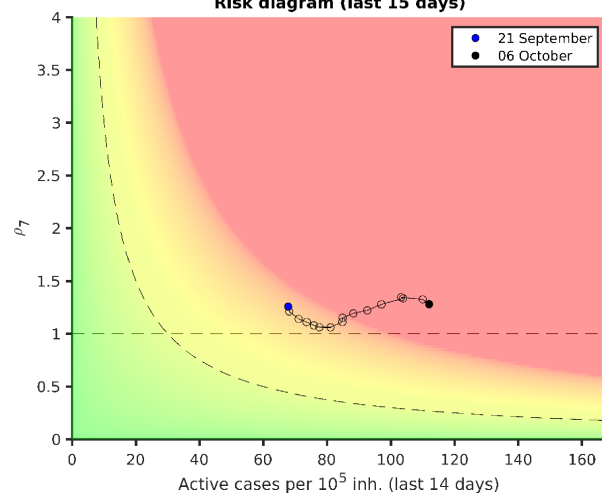
Actual $\rho_7 = 1.3$



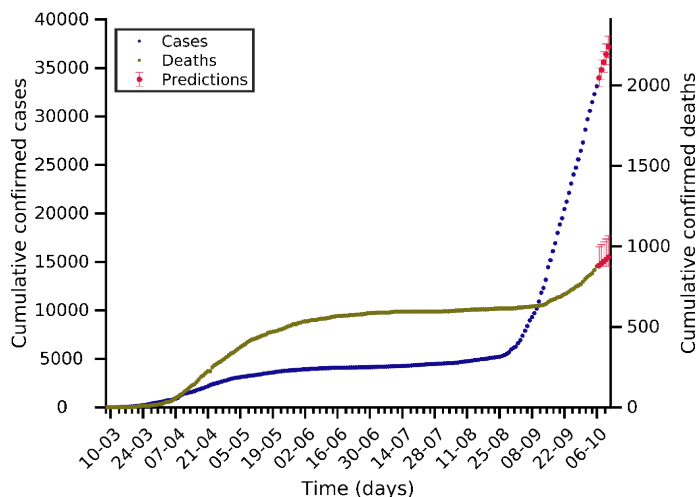
Risk diagram



Risk diagram (last 15 days)



Hungary 06-10-2020. Pop: 9.7M. Cumulative incidence: 343/10⁵

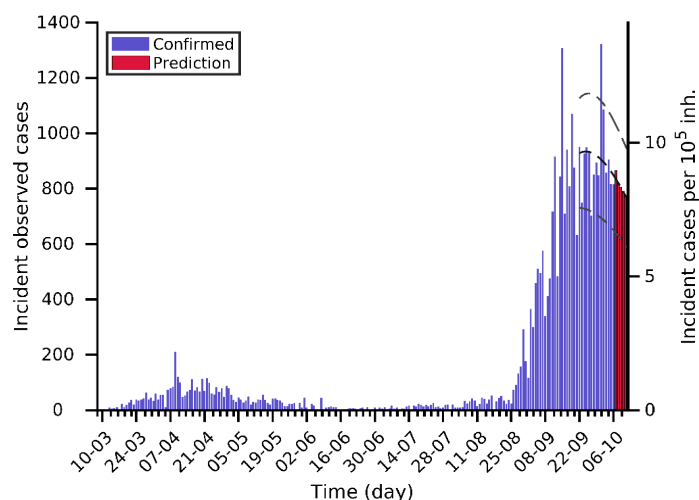


Predictions for next days

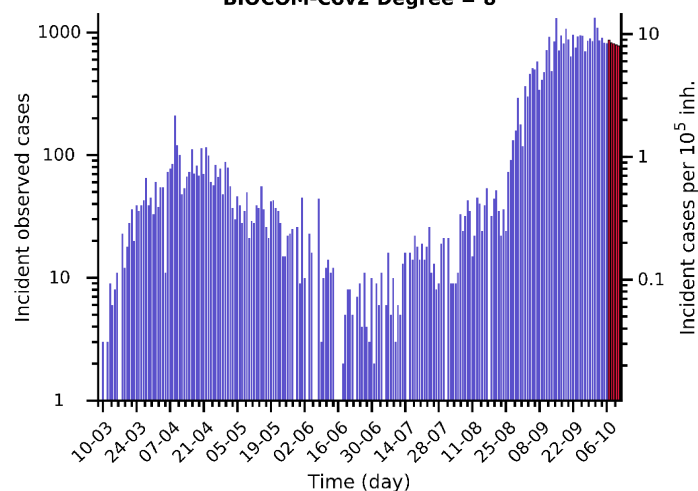
Day	Number of cases	95% Confidence Interval
07-10-2020	33980 (+866)	[33114 - 34984]
09-10-2020	35607 (+806)	[34565 - 36649]
11-10-2020	37173 (+775)	[36052 - 38294]

Current indicators

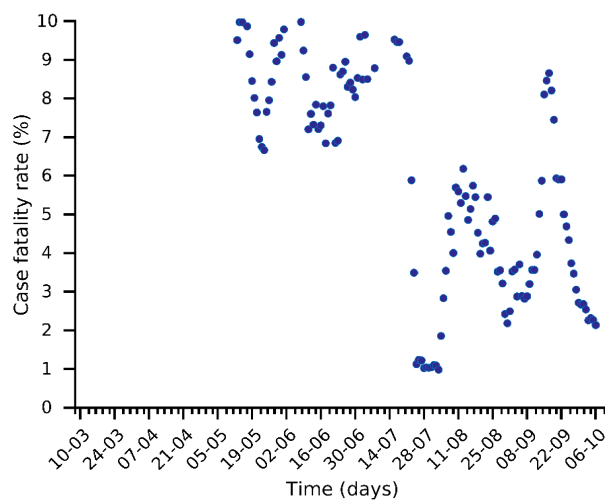
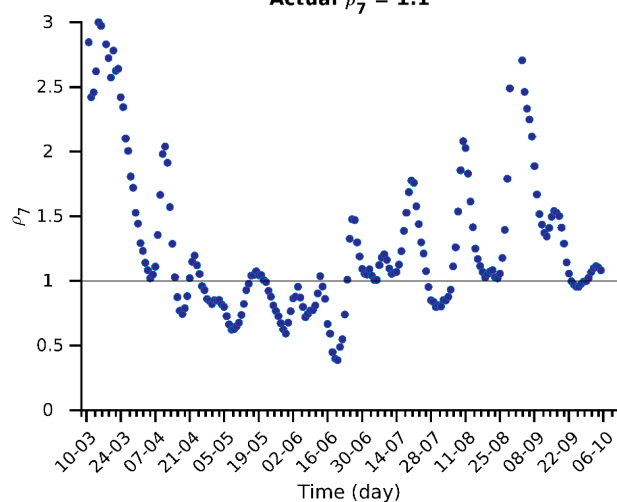
A ₁₄	EPG	CFR
131	142	2.13 %



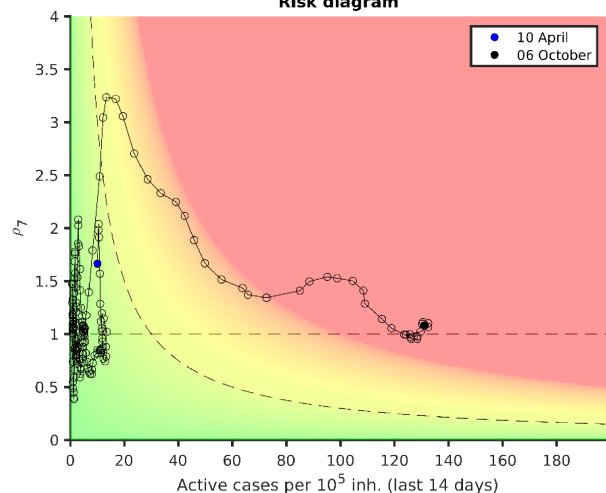
BIOCOM-Cov2 Degree = 8



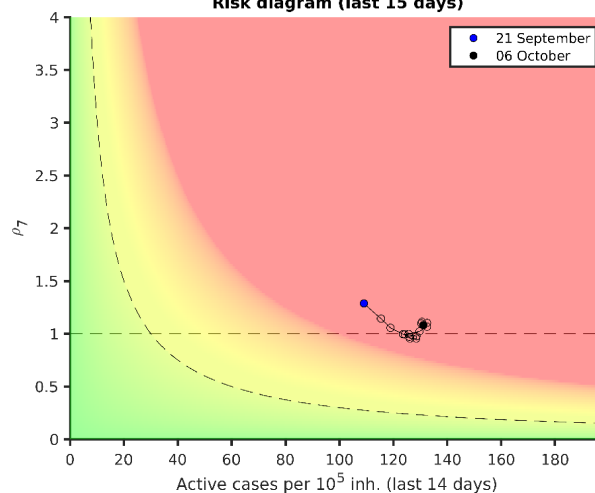
Actual $\rho_7 = 1.1$



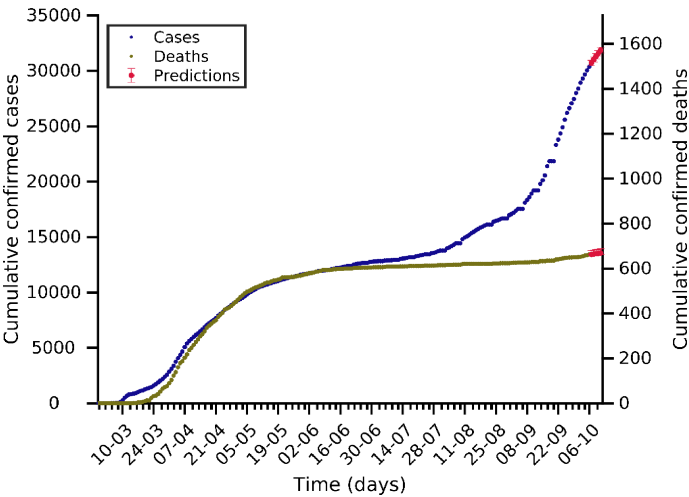
Risk diagram



Risk diagram (last 15 days)

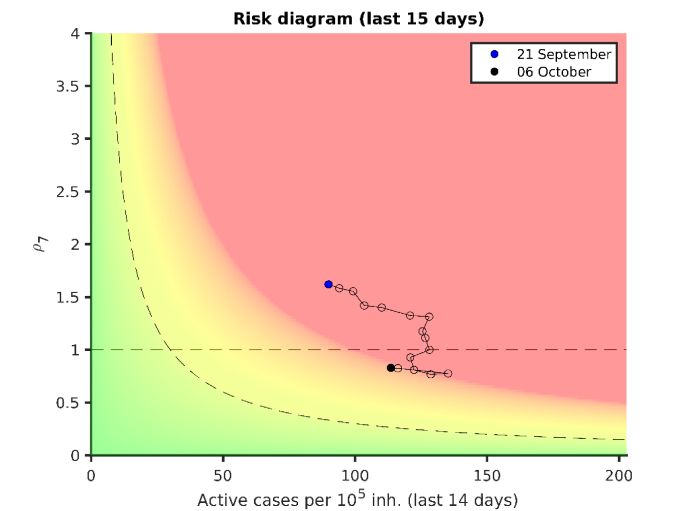
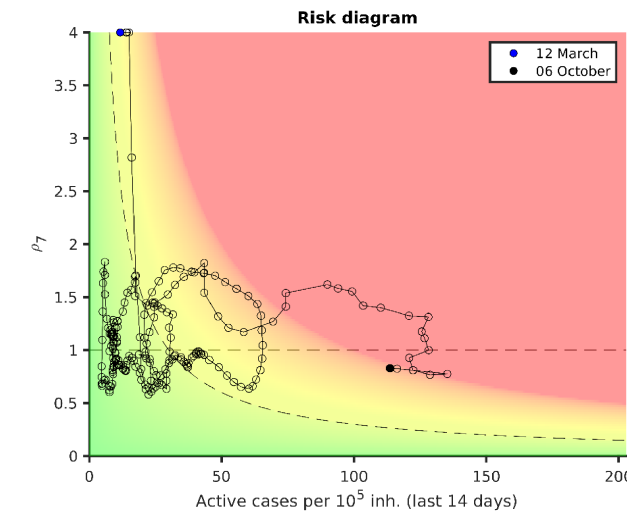
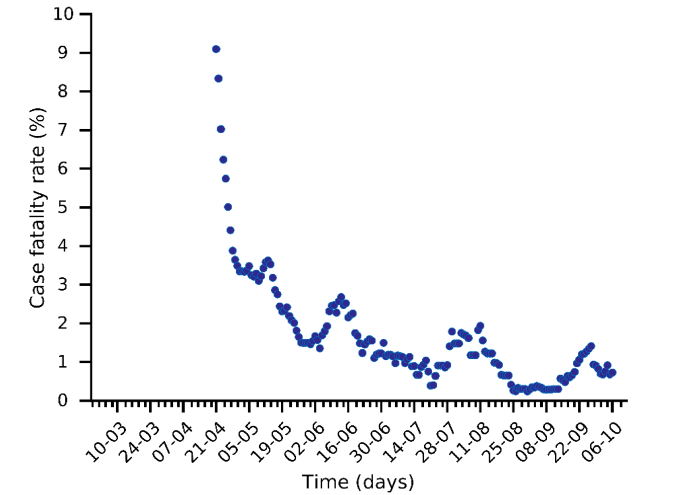
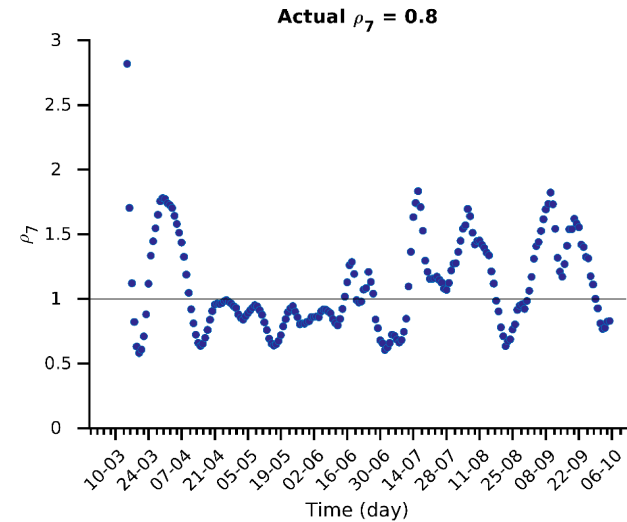
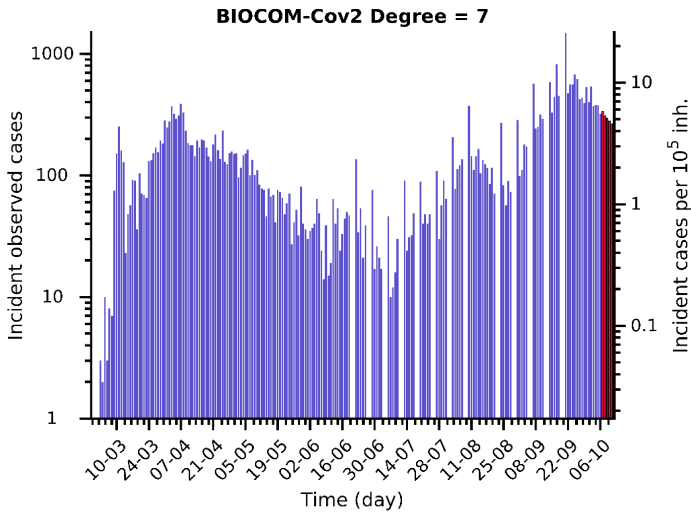
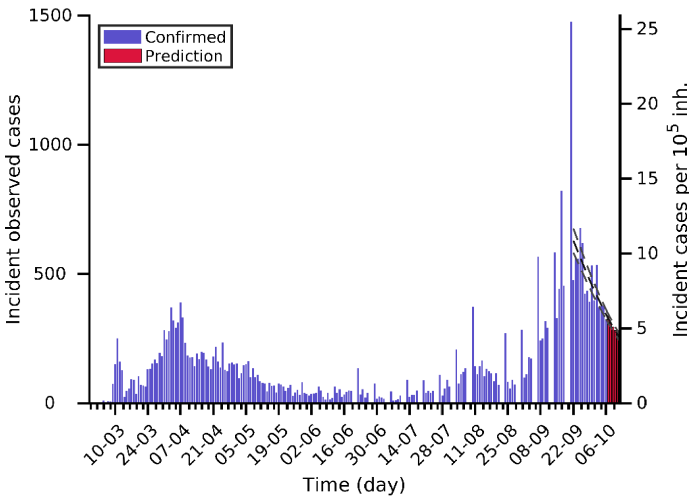


Denmark 06-10-2020. Pop: 5.8M. Cumulative incidence: 524/10⁵

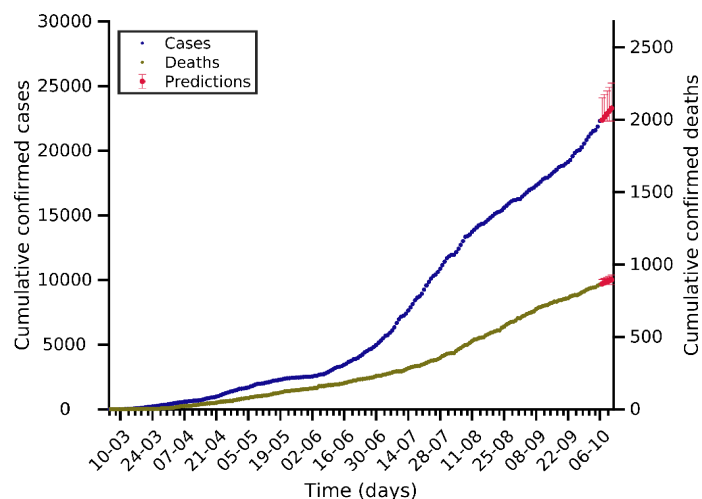


Predictions for next days		
Day	Number of cases	95% Confidence Interval
07-10-2020	30715 (+336)	[30477 - 30954]
09-10-2020	31322 (+295)	[31077 - 31567]
11-10-2020	31868 (+266)	[31611 - 32126]

Current indicators		
A ₁₄	EPG	CFR
114	94	0.72 %



Bulgaria 06-10-2020. Pop: 6.9M. Cumulative incidence: 321/10⁵

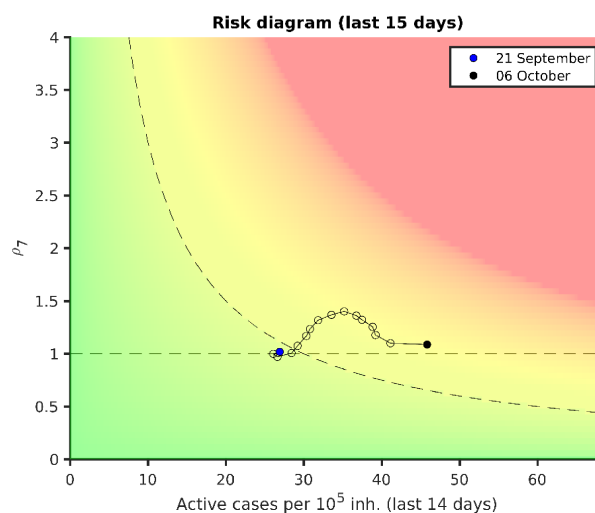
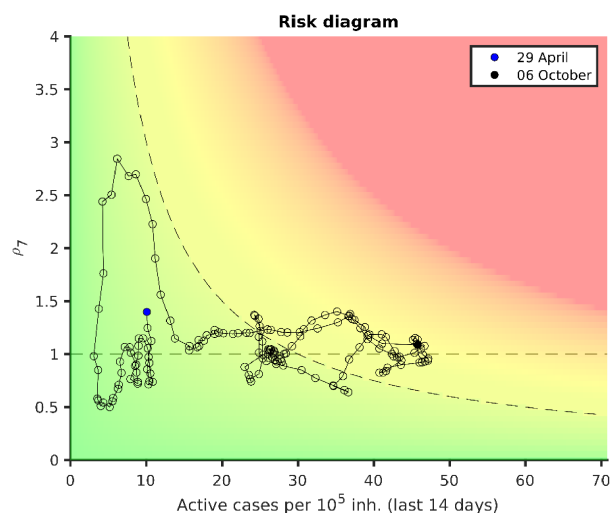
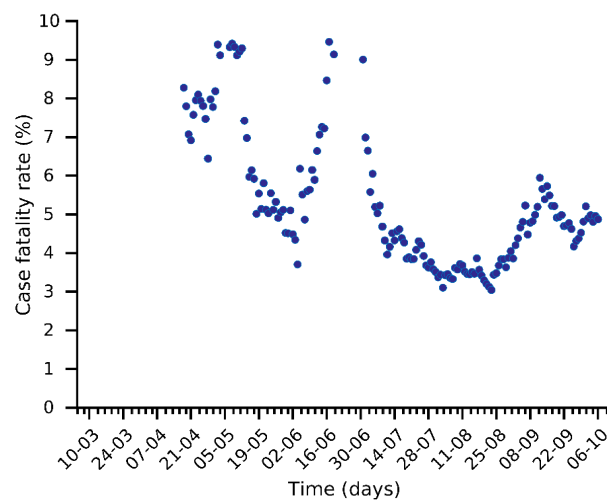
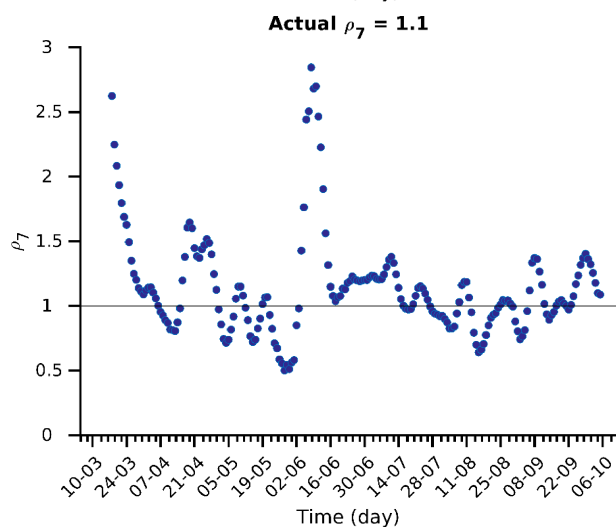
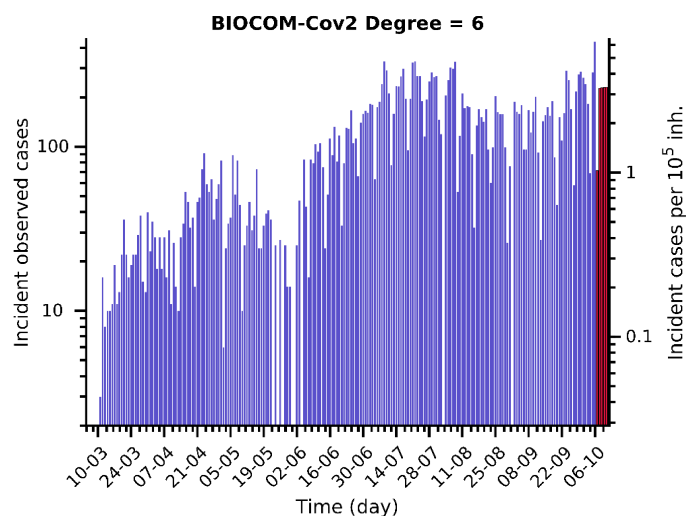
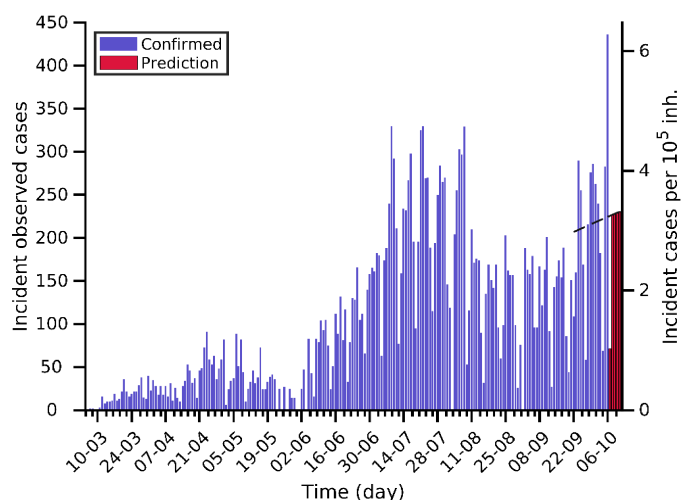


Predictions for next days

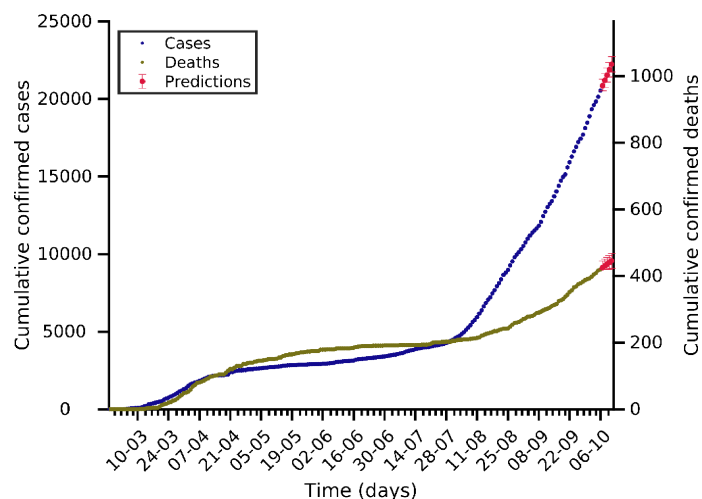
Day	Number of cases	95% Confidence Interval
07-10-2020	22377 (+71)	[22306 - 24096]
09-10-2020	22832 (+228)	[22306 - 24623]
11-10-2020	23292 (+231)	[22306 - 25239]

Current indicators

A ₁₄	EPG	CFR
46	50	4.87 %



Greece 06-10-2020. Pop: 10.4M. Cumulative incidence: 197/10⁵

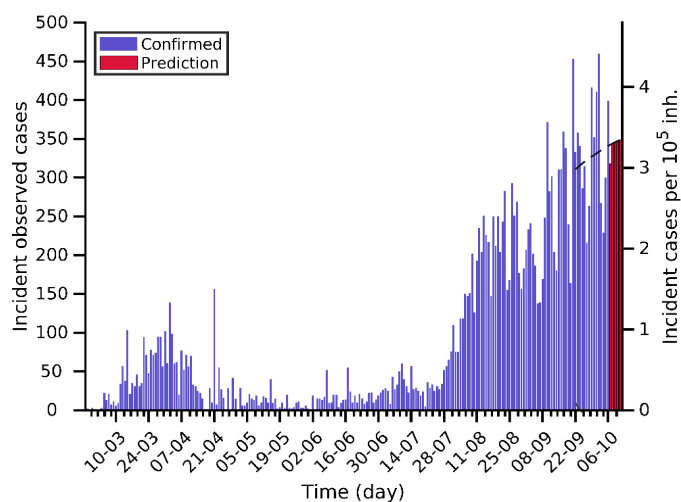


Predictions for next days

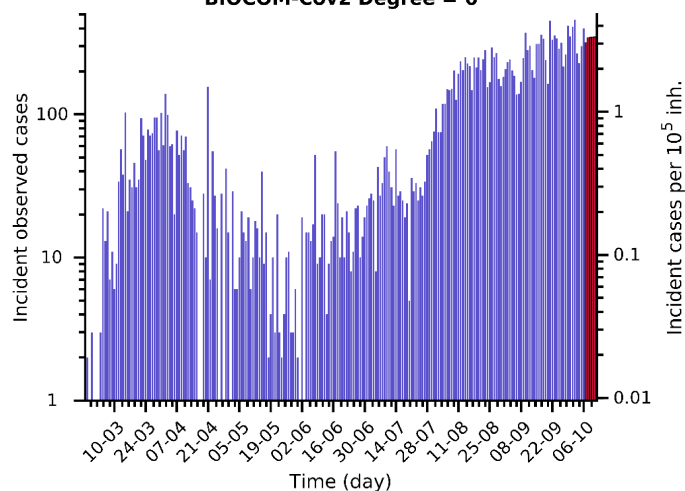
Day	Number of cases	95% Confidence Interval
07-10-2020	20859 (+318)	[20541 - 21291]
09-10-2020	21548 (+346)	[21097 - 22000]
11-10-2020	22244 (+349)	[21753 - 22736]

Current indicators

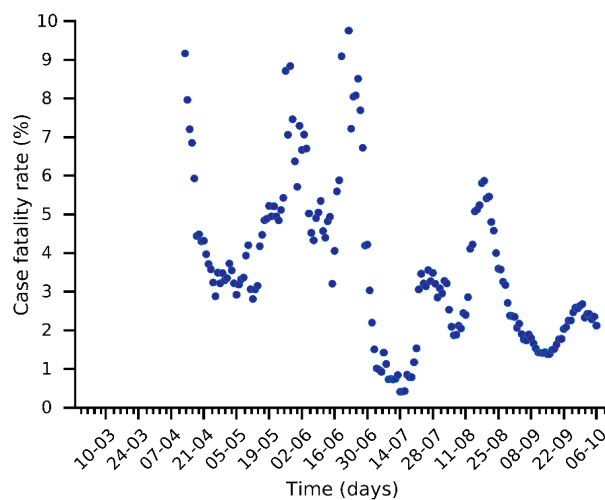
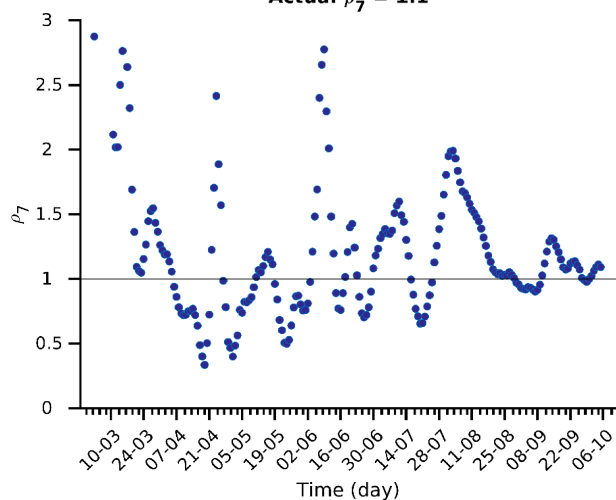
A ₁₄	EPG	CFR
44	48	2.12 %



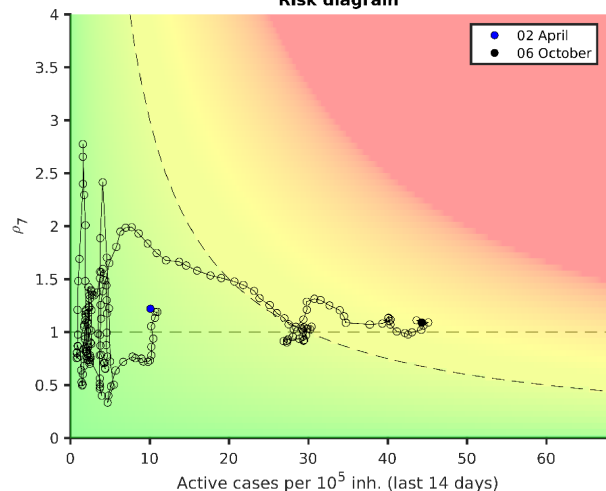
BIOCOM-Cov2 Degree = 6



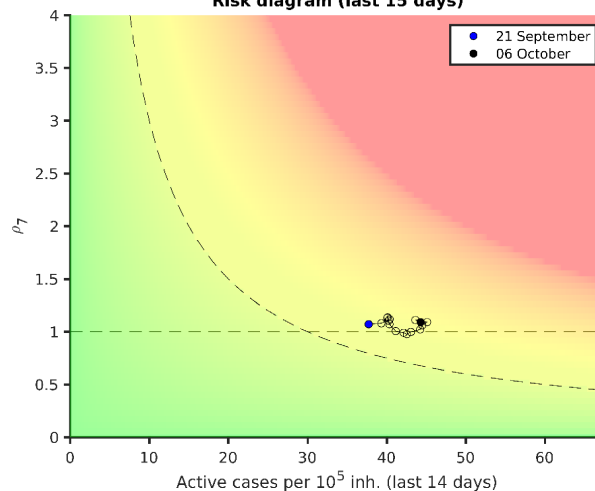
Actual $\rho_7 = 1.1$



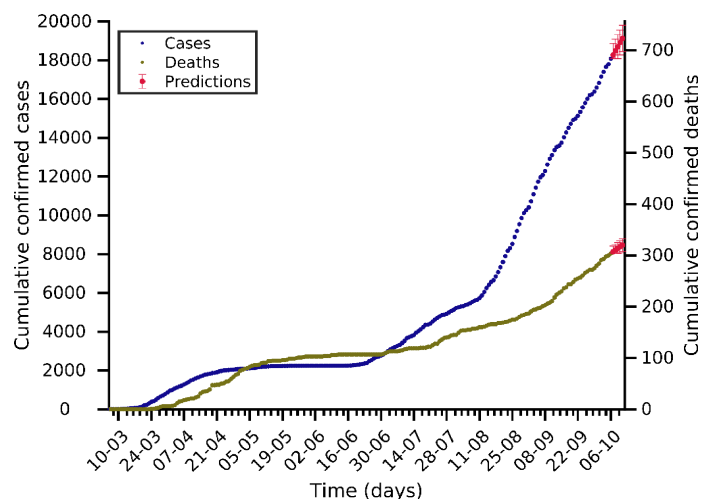
Risk diagram



Risk diagram (last 15 days)



Croatia 06-10-2020. Pop: 4.1M. Cumulative incidence: 441/10⁵

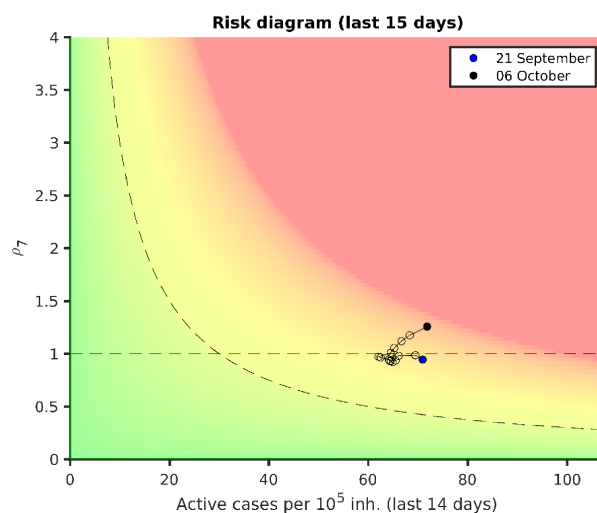
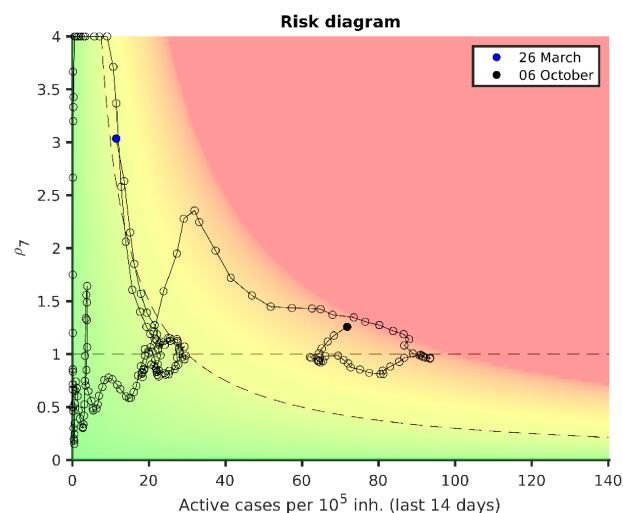
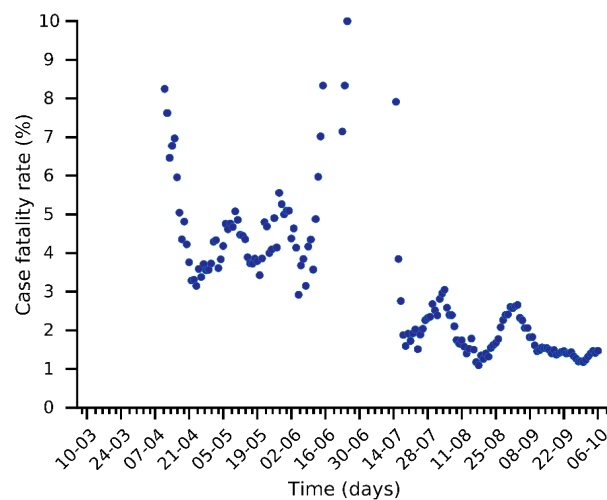
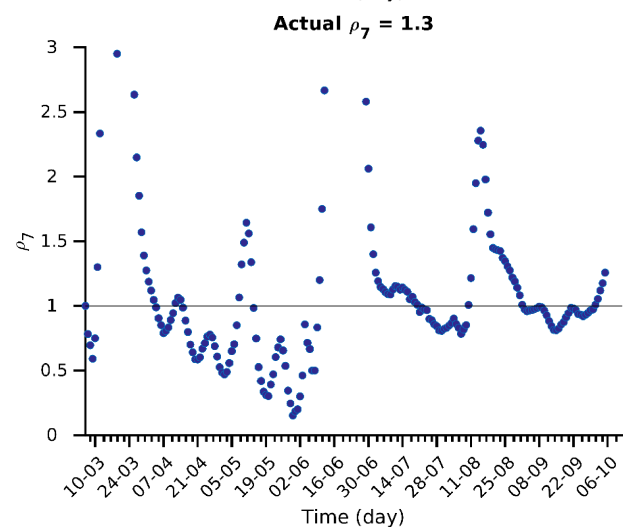
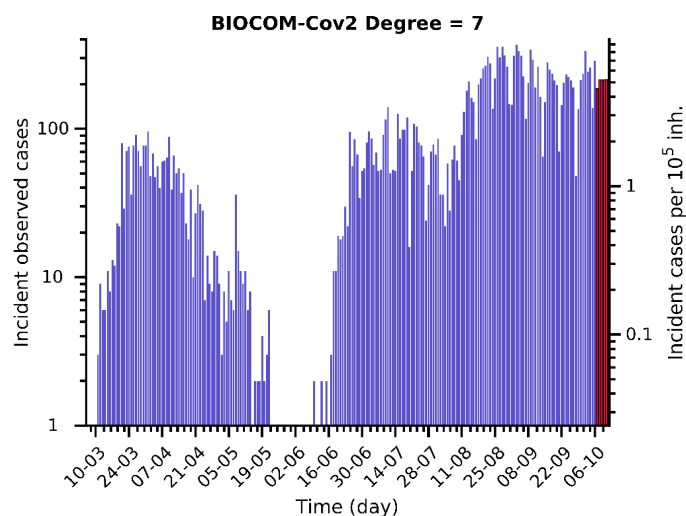
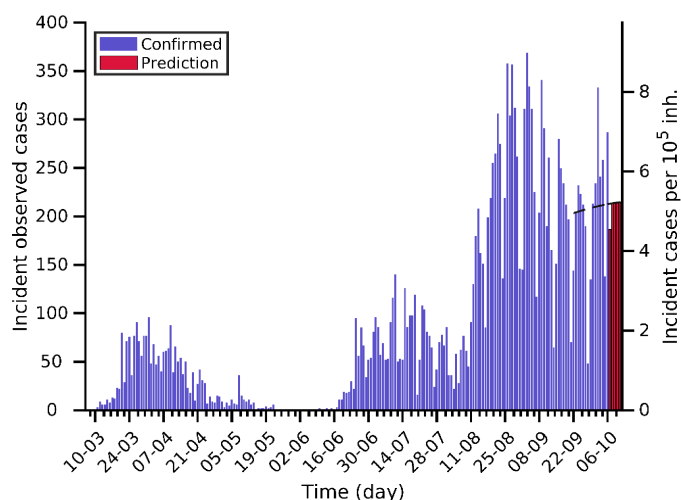


Predictions for next days

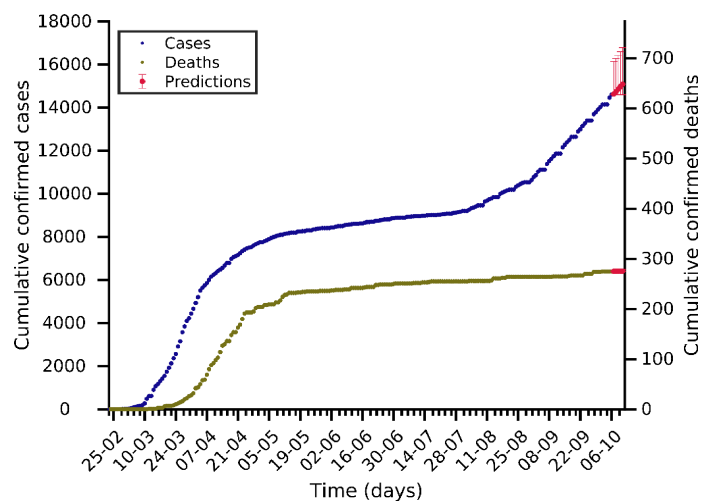
Day	Number of cases	95% Confidence Interval
07-10-2020	18271 (+187)	[18084 - 18870]
09-10-2020	18698 (+214)	[18084 - 19322]
11-10-2020	19127 (+215)	[18450 - 19805]

Current indicators

A ₁₄	EPG	CFR
72	90	1.47 %



Norway 06-10-2020. Pop: 5.4M. Cumulative incidence: 269/10⁵

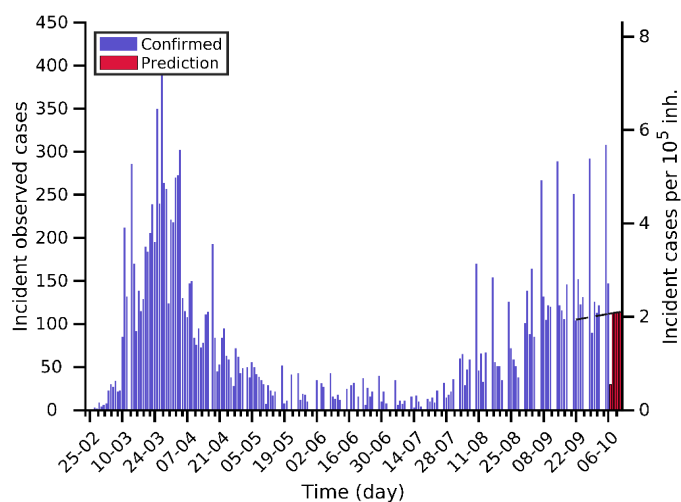


Predictions for next days

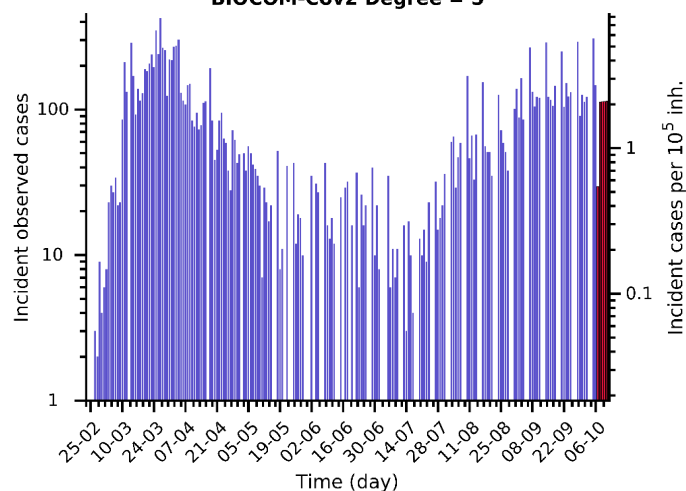
Day	Number of cases	95% Confidence Interval
07-10-2020	14634 (+30)	[14604 - 16143]
09-10-2020	14859 (+113)	[14604 - 16430]
11-10-2020	15087 (+114)	[14604 - 16792]

Current indicators

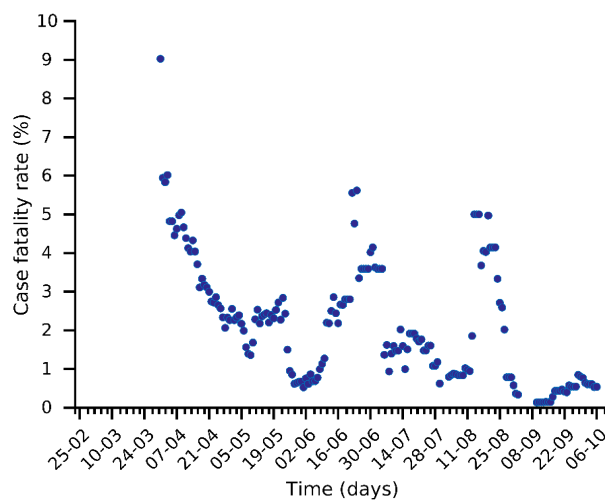
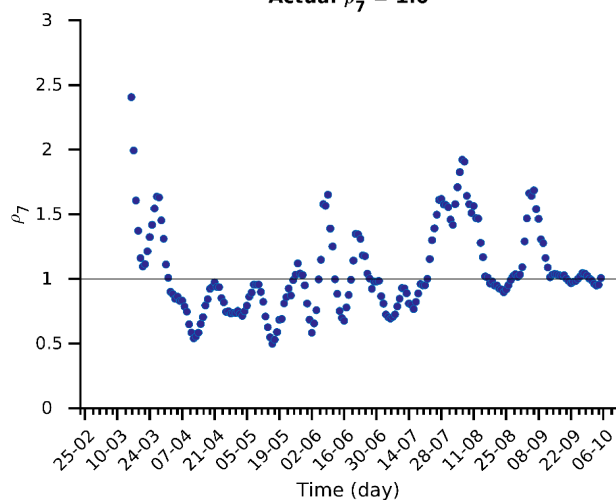
A ₁₄	EPG	CFR
30	30	0.54 %



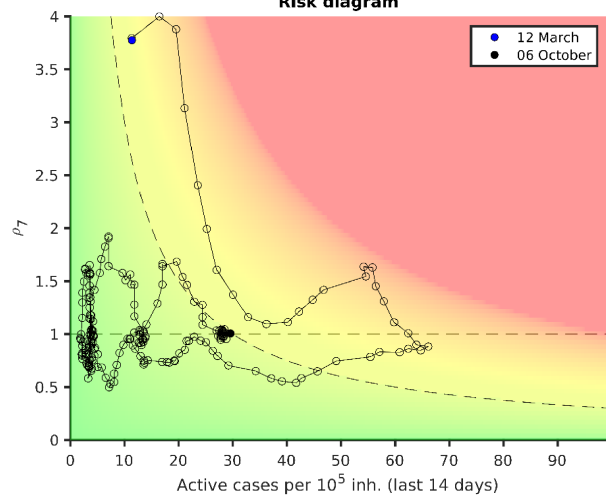
BIOCOM-Cov2 Degree = 5



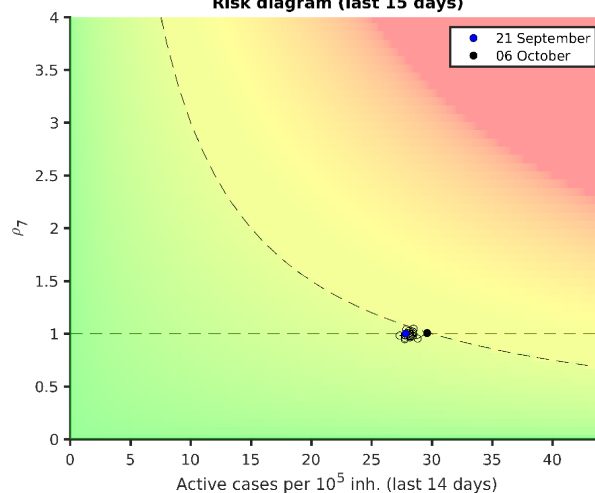
Actual $\rho_7 = 1.0$



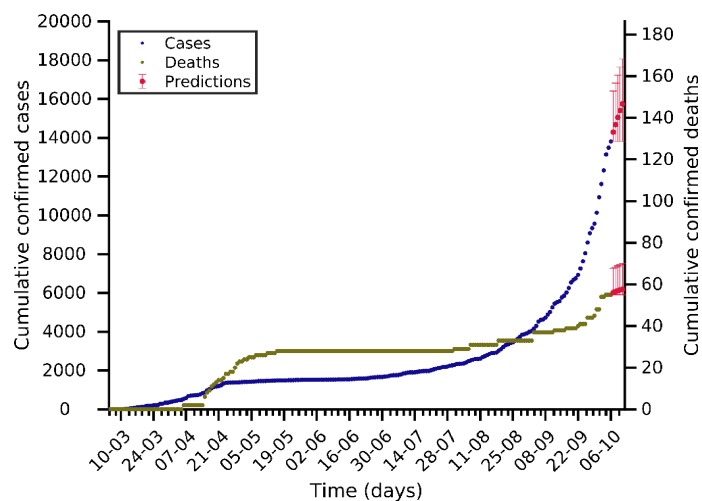
Risk diagram



Risk diagram (last 15 days)



Slovakia 06-10-2020. Pop: 5.5M. Cumulative incidence: 253/10⁵

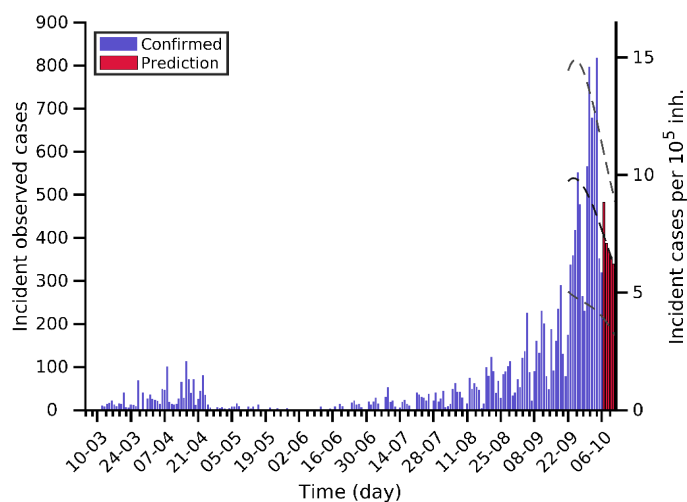


Predictions for next days

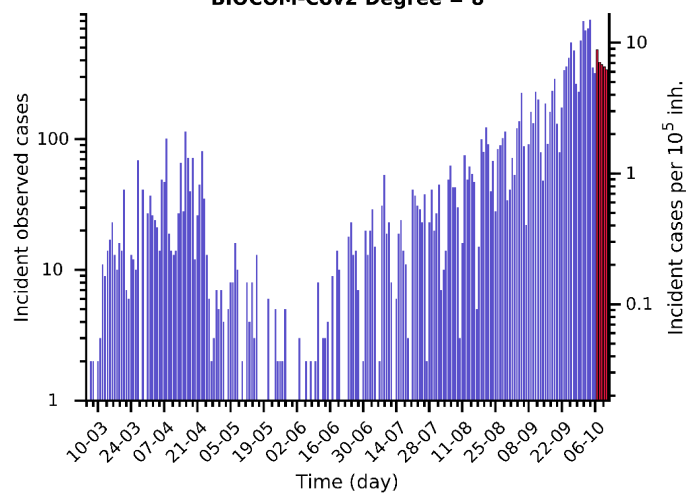
Day	Number of cases	95% Confidence Interval
07-10-2020	14295 (+483)	[13812 - 16410]
09-10-2020	15054 (+372)	[13812 - 17240]
11-10-2020	15750 (+340)	[13812 - 18071]

Current indicators

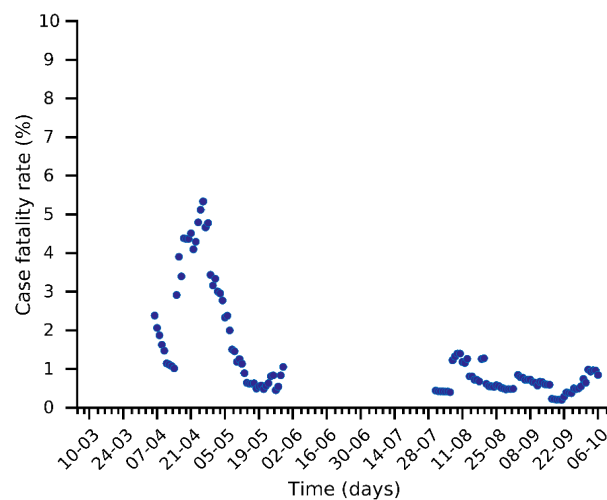
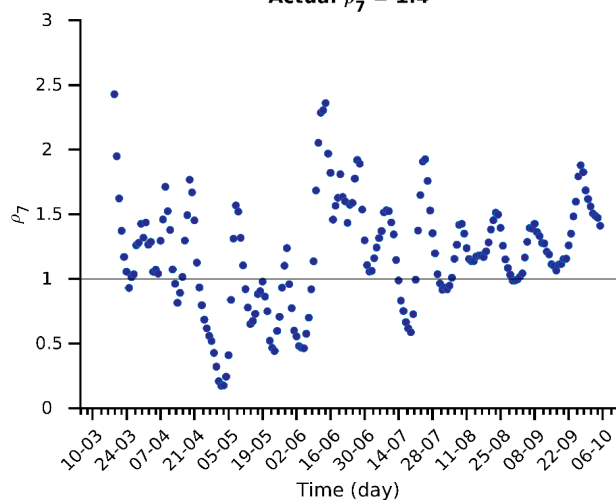
A ₁₄	EPG	CFR
126	178	0.84 %



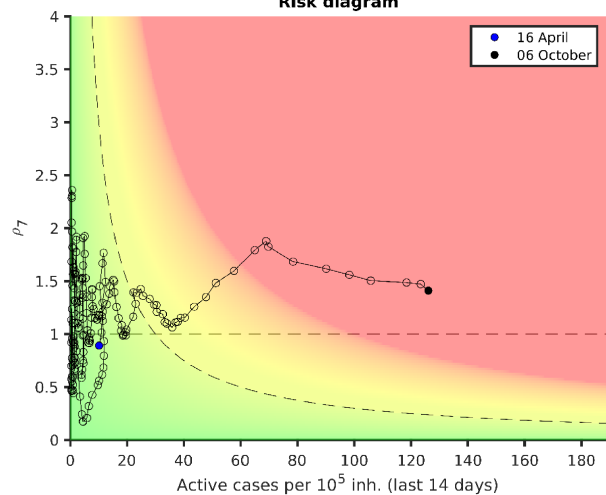
BIOCOM-Cov2 Degree = 8



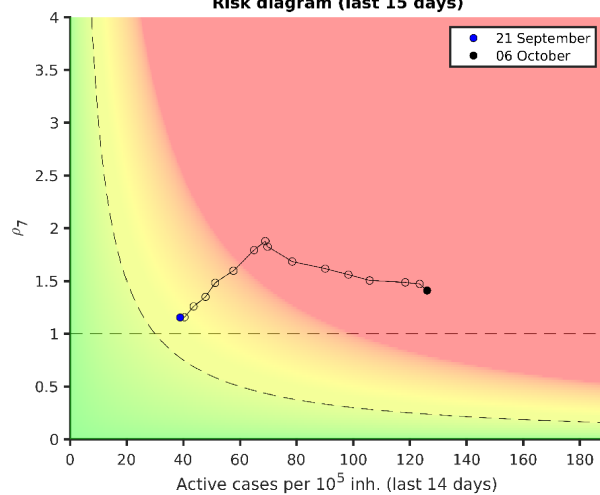
Actual $\rho_7 = 1.4$



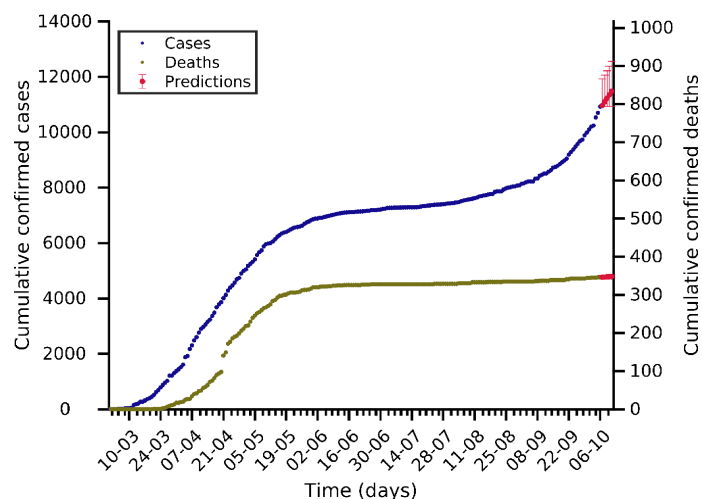
Risk diagram



Risk diagram (last 15 days)



Finland 06-10-2020. Pop: 5.5M. Cumulative incidence: 197/10⁵

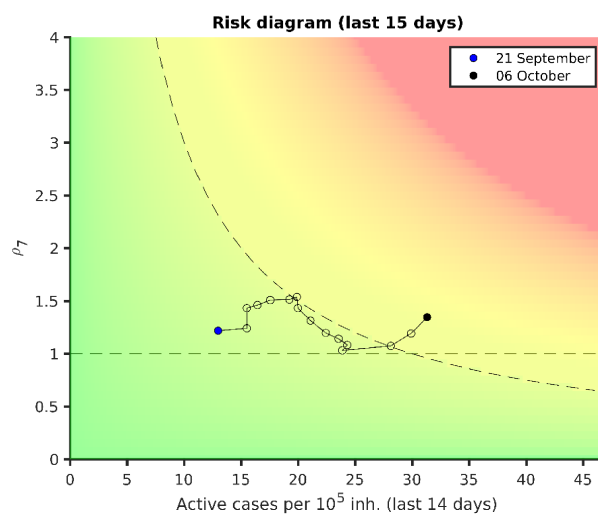
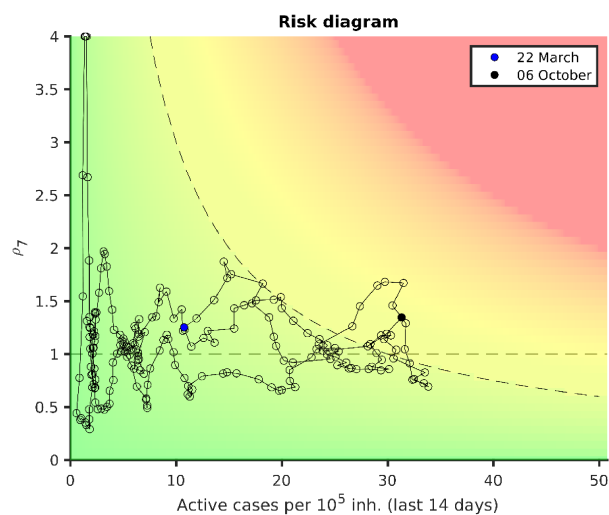
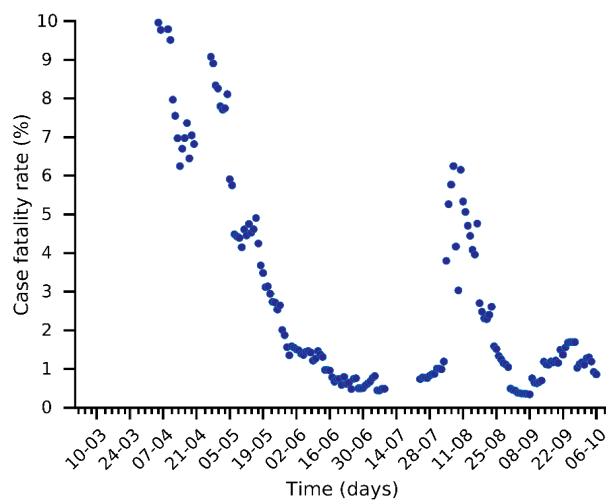
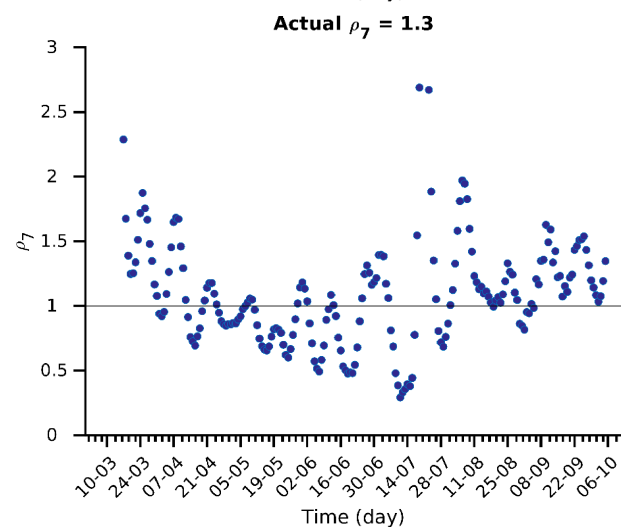
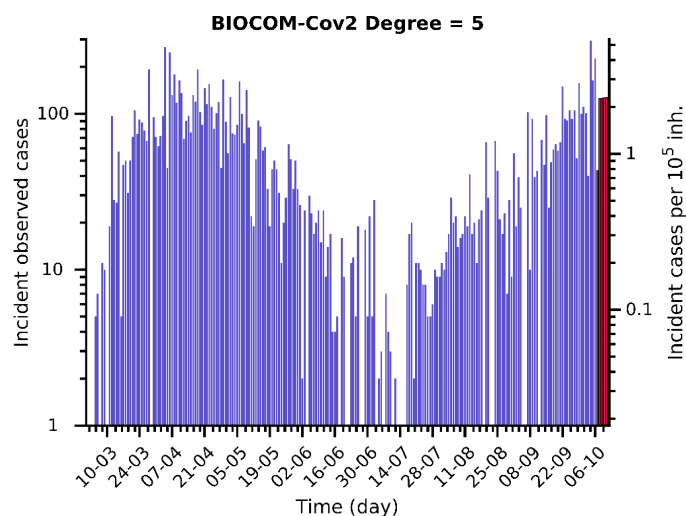
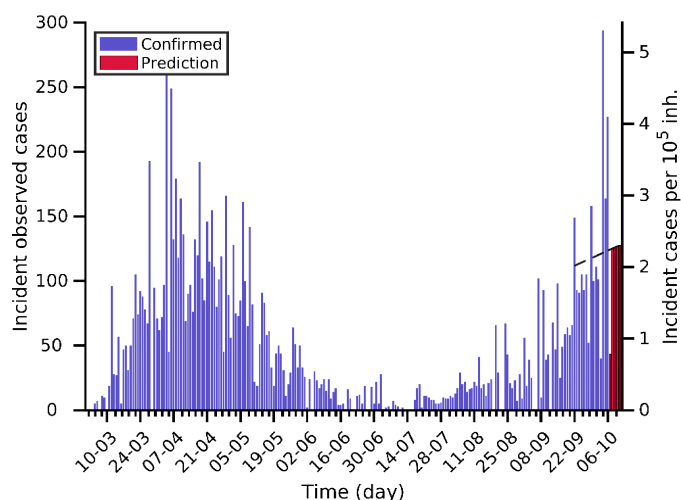


Predictions for next days

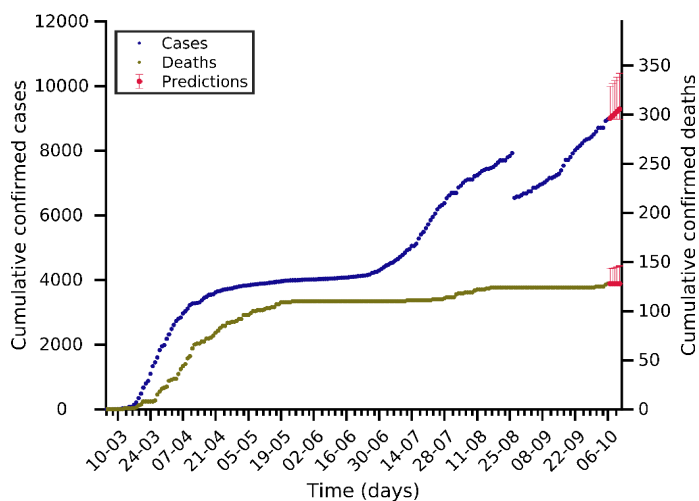
Day	Number of cases	95% Confidence Interval
07-10-2020	10972 (+43)	[10929 - 11928]
09-10-2020	11223 (+126)	[10929 - 12220]
11-10-2020	11478 (+128)	[10929 - 12564]

Current indicators

A ₁₄	EPG	CFR
31	42	0.86 %



Luxembourg 06-10-2020. Pop: 0.6M. Cumulative incidence: 1434/10⁵

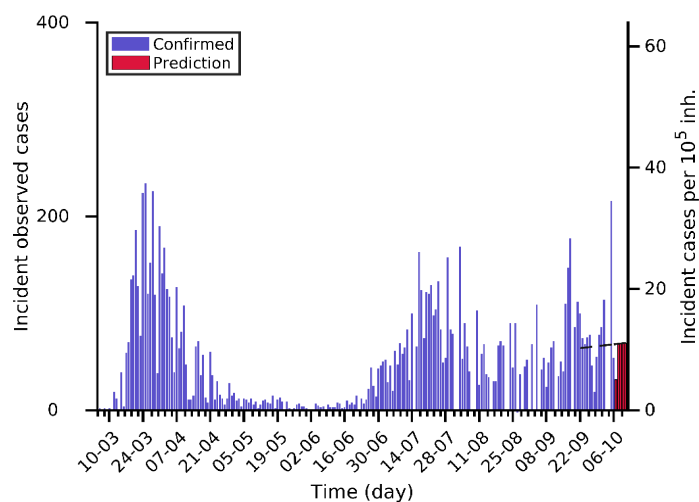


Predictions for next days

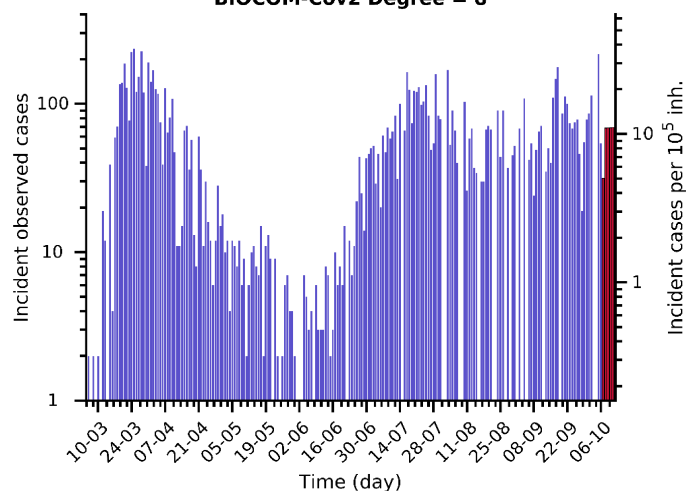
Day	Number of cases	95% Confidence Interval
07-10-2020	9010 (+31)	[8979 - 9994]
09-10-2020	9148 (+69)	[8979 - 10171]
11-10-2020	9286 (+69)	[8979 - 10397]

Current indicators

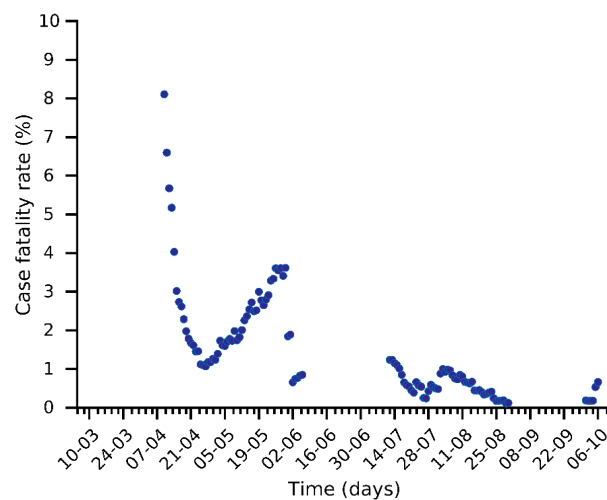
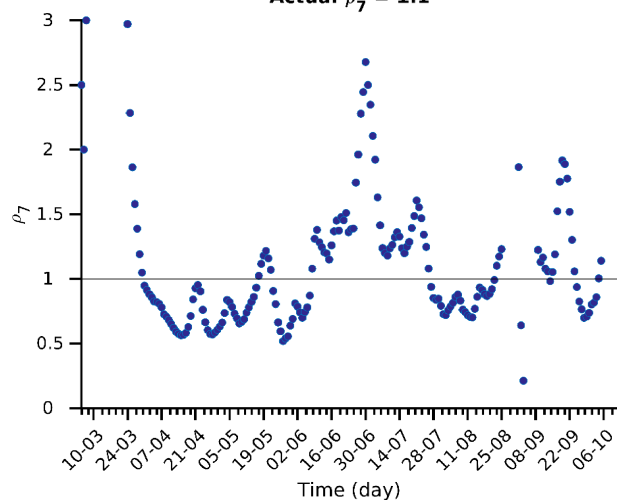
A ₁₄	EPG	CFR
154	175	0.66 %



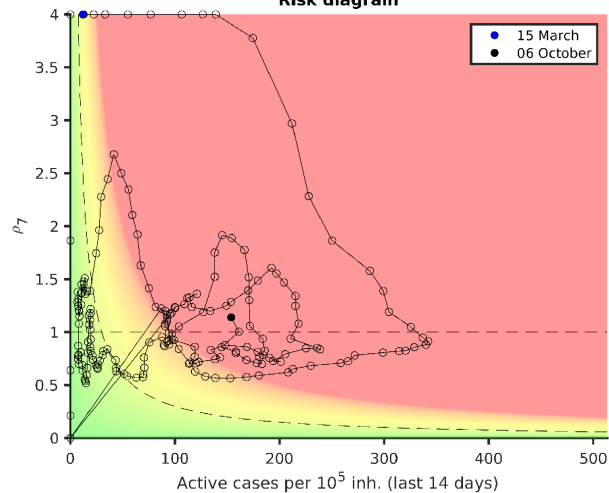
BIOCOM-Cov2 Degree = 8



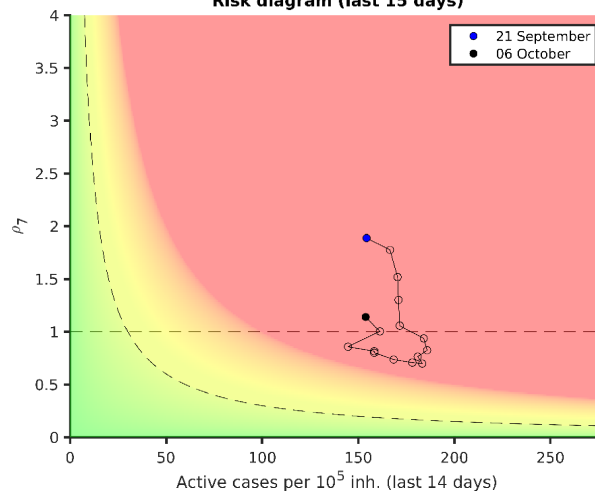
Actual $\rho_7 = 1.1$



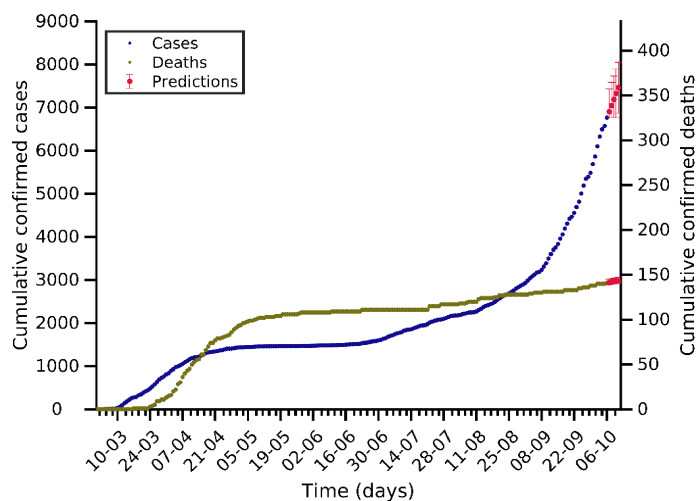
Risk diagram



Risk diagram (last 15 days)



Slovenia 06-10-2020. Pop: 2.1M. Cumulative incidence: 326/10⁵

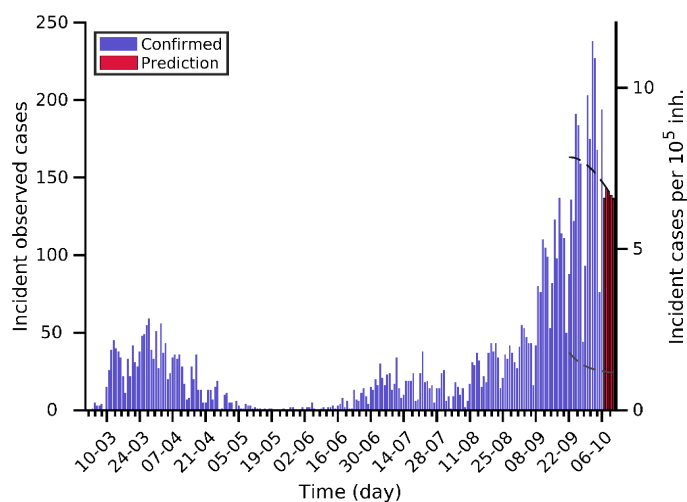


Predictions for next days

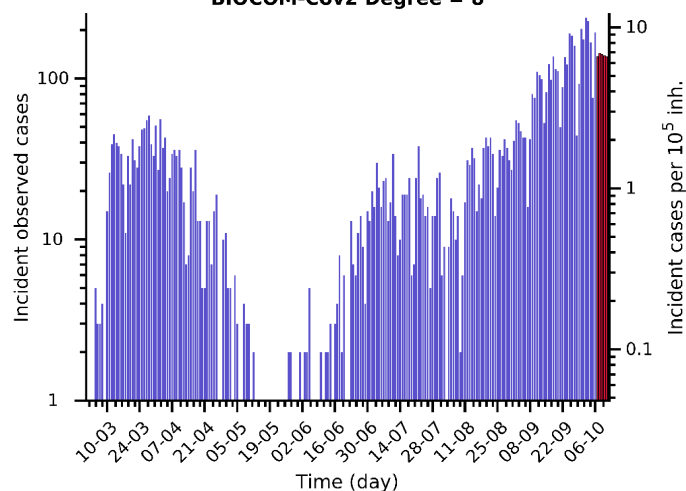
Day	Number of cases	95% Confidence Interval
07-10-2020	6905 (+137)	[6768 - 7433]
09-10-2020	7189 (+141)	[6768 - 7738]
11-10-2020	7464 (+136)	[6874 - 8055]

Current indicators

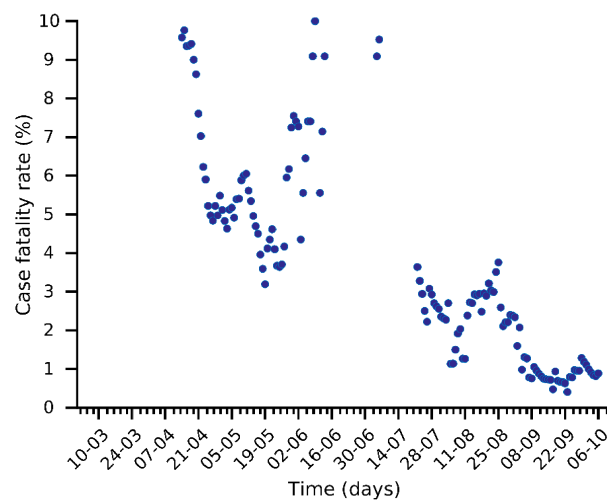
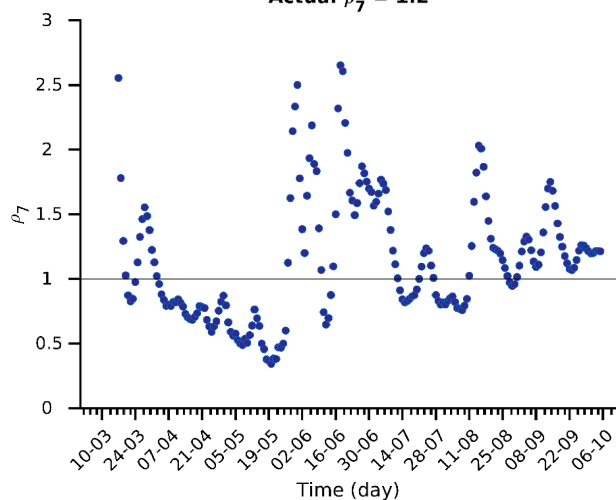
A ₁₄	EPG	CFR
106	129	0.88 %



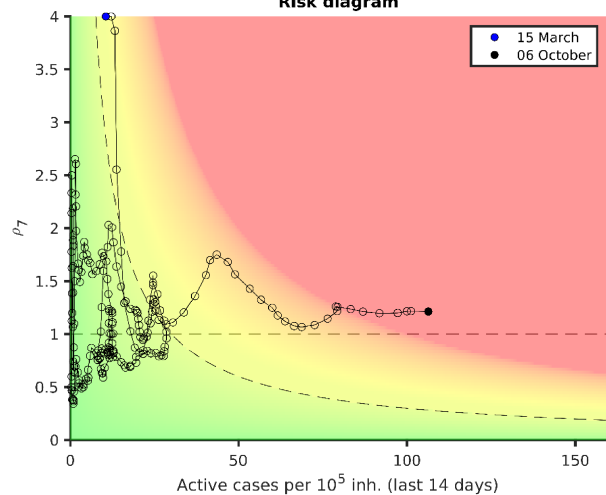
BIOCOM-Cov2 Degree = 8



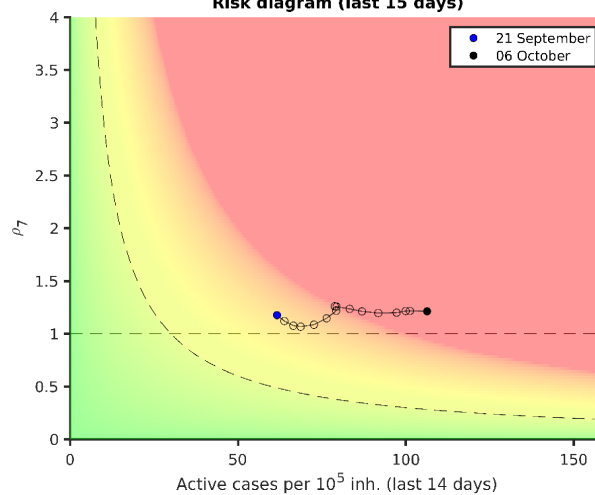
Actual $\rho_7 = 1.2$



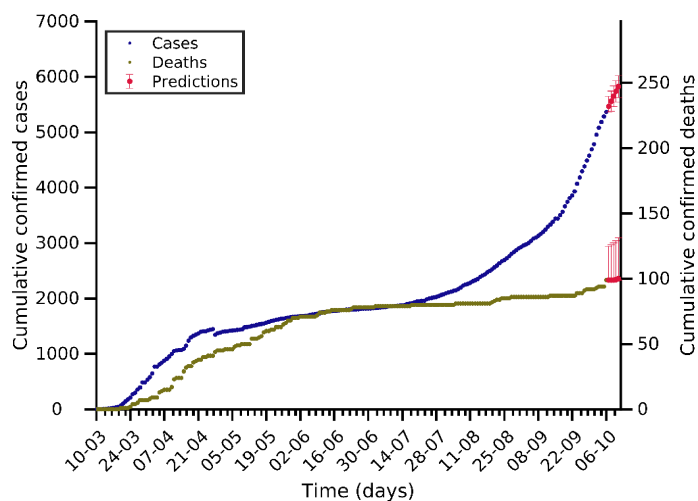
Risk diagram



Risk diagram (last 15 days)



Lithuania 06-10-2020. Pop: 2.7M. Cumulative incidence: 197/10⁵

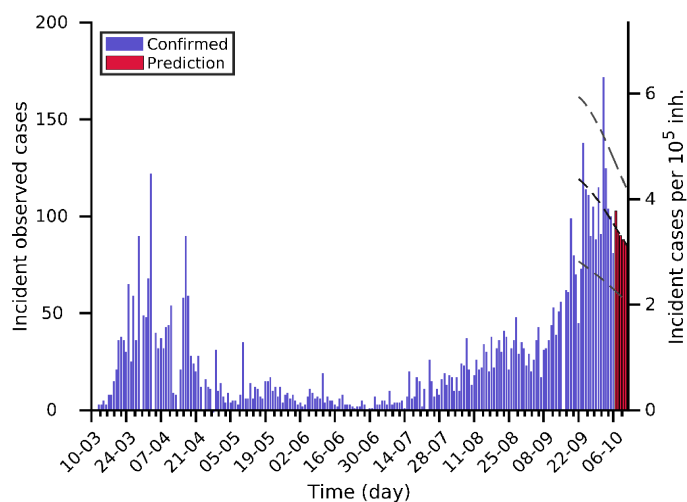


Predictions for next days

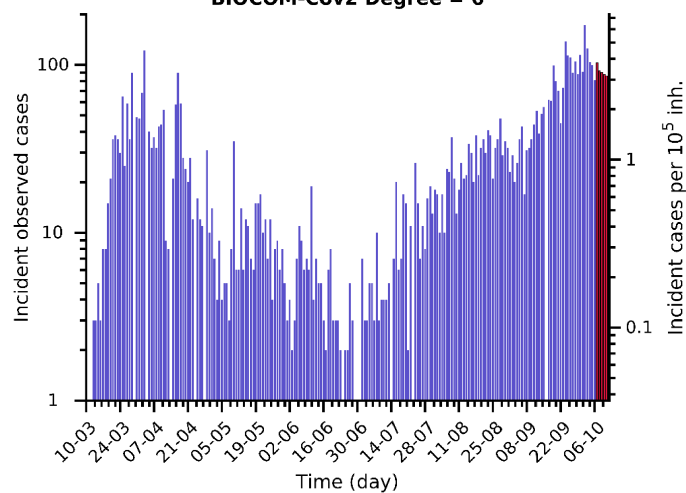
Day	Number of cases	95% Confidence Interval
07-10-2020	5469 (+103)	[5366 - 5649]
09-10-2020	5651 (+90)	[5465 - 5837]
11-10-2020	5825 (+86)	[5626 - 6024]

Current indicators

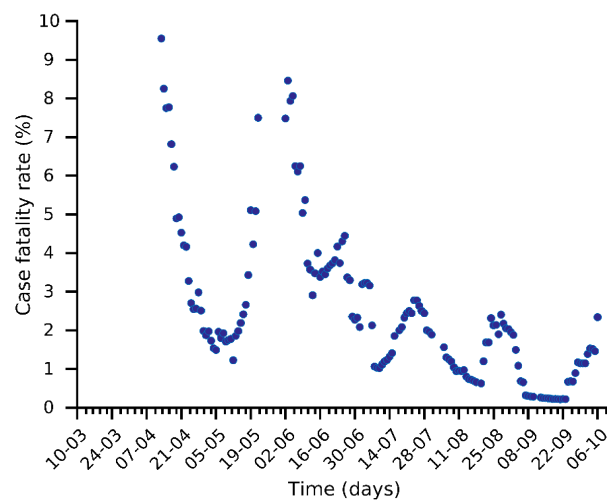
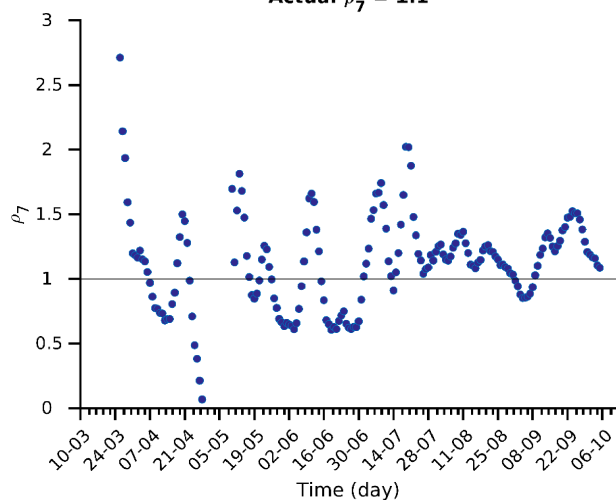
A ₁₄	EPG	CFR
55	60	2.34 %



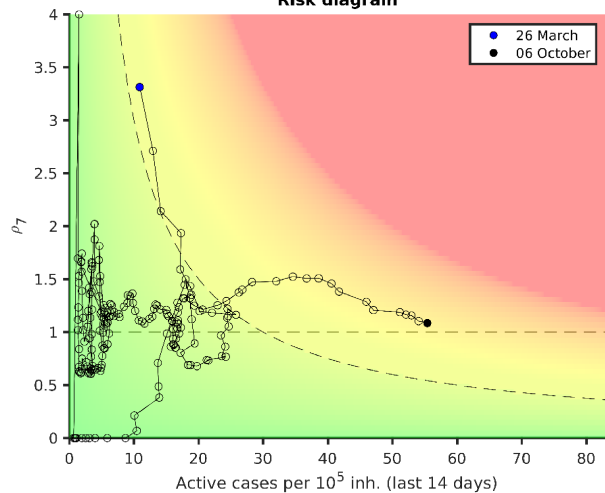
BIOCOM-Cov2 Degree = 6



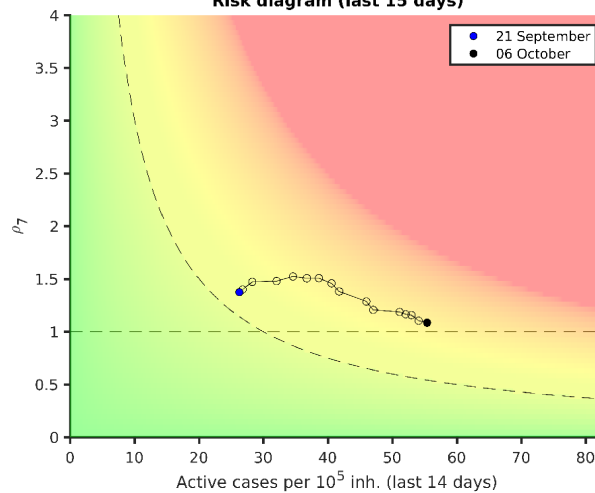
Actual $\rho_7 = 1.1$



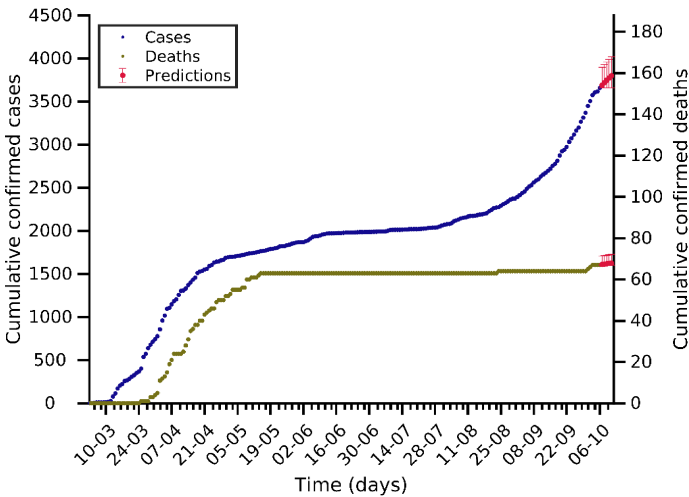
Risk diagram



Risk diagram (last 15 days)

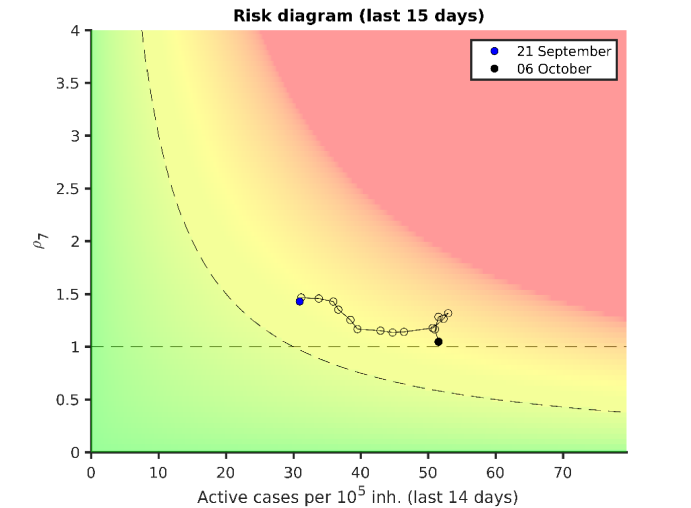
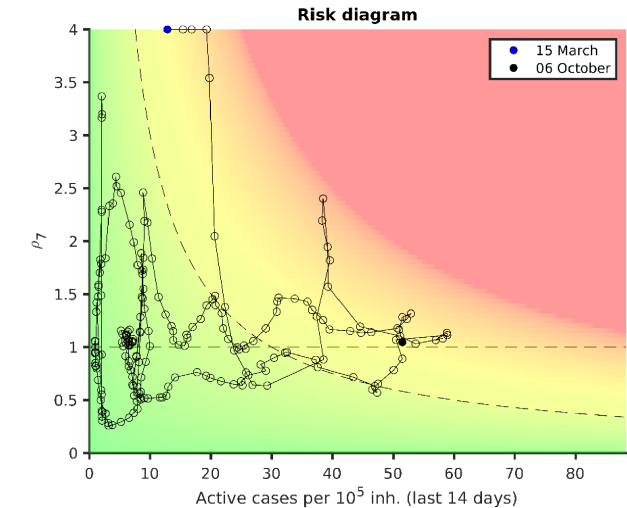
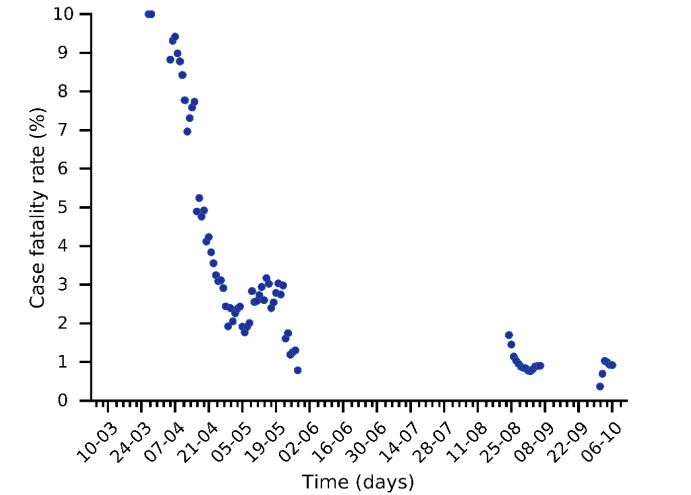
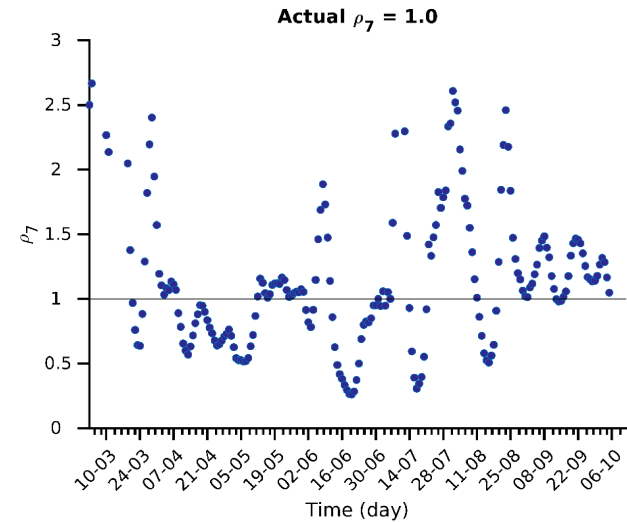
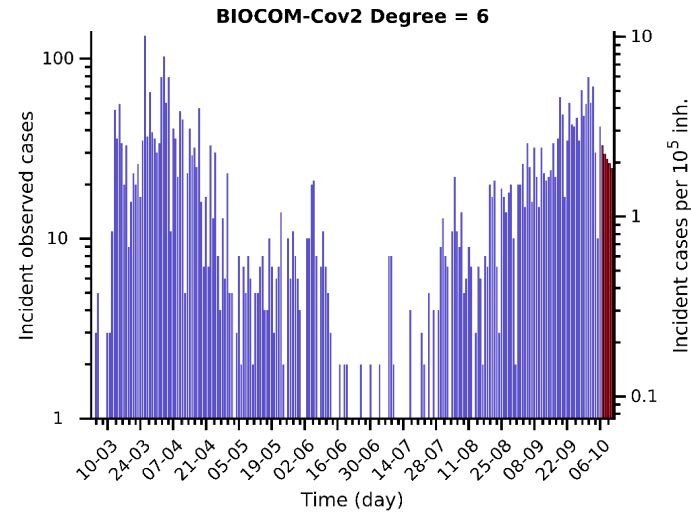
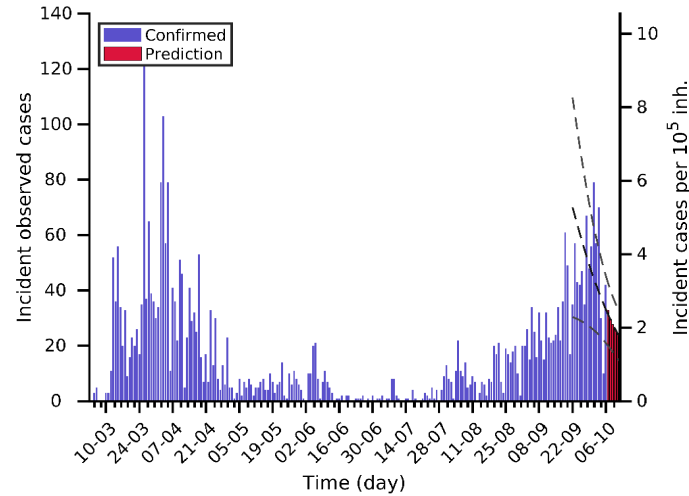


Estonia 06-10-2020. Pop: 1.3M. Cumulative incidence: 276/10⁵

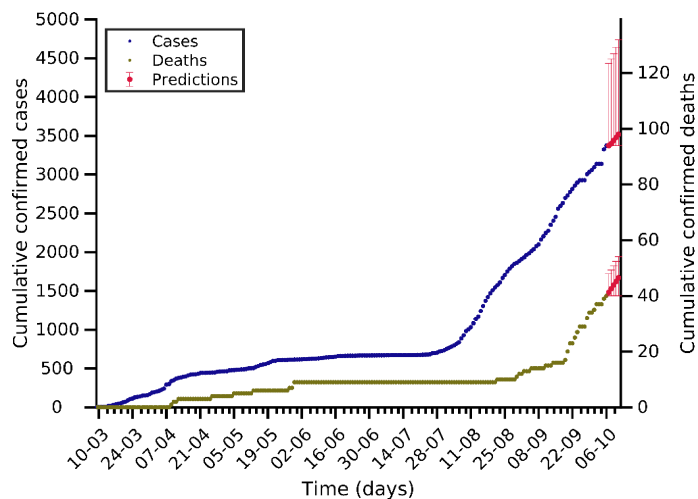


Predictions for next days		
Day	Number of cases	95% Confidence Interval
07-10-2020	3692 (+33)	[3659 - 3898]
09-10-2020	3749 (+28)	[3659 - 3961]
11-10-2020	3800 (+25)	[3659 - 4021]

Current indicators		
A ₁₄	EPG	CFR
51	54	0.92 %



Malta 06-10-2020. Pop: 0.4M. Cumulative incidence: 764/10⁵

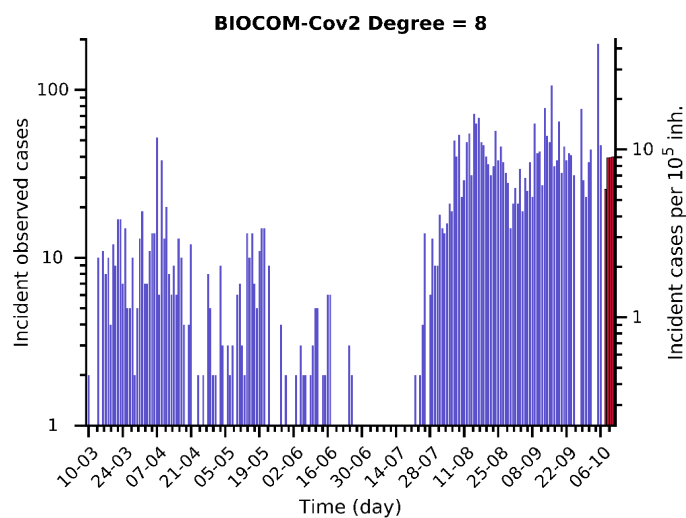
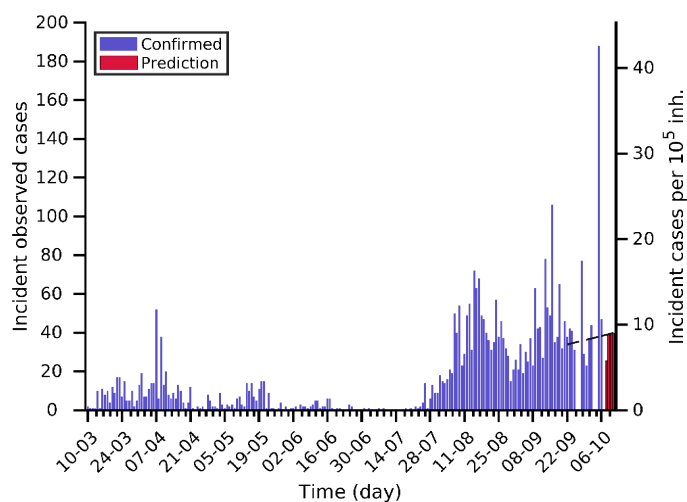


Predictions for next days

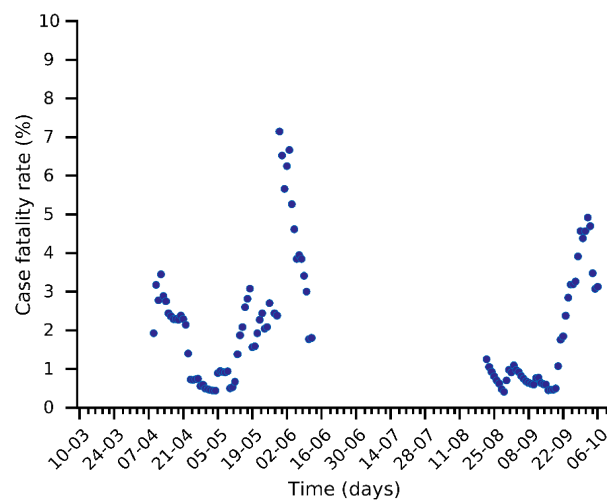
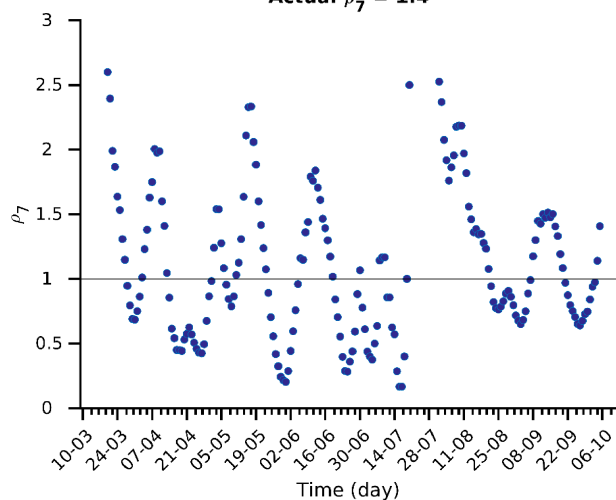
Day	Number of cases	95% Confidence Interval
07-10-2020	3374 (+0)	[3374 - 4434]
09-10-2020	3439 (+39)	[3374 - 4558]
11-10-2020	3518 (+40)	[3374 - 4740]

Current indicators

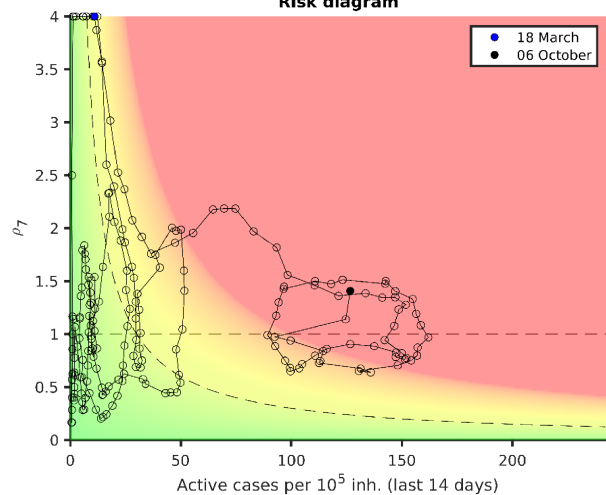
A ₁₄	EPG	CFR
127	178	3.12 %



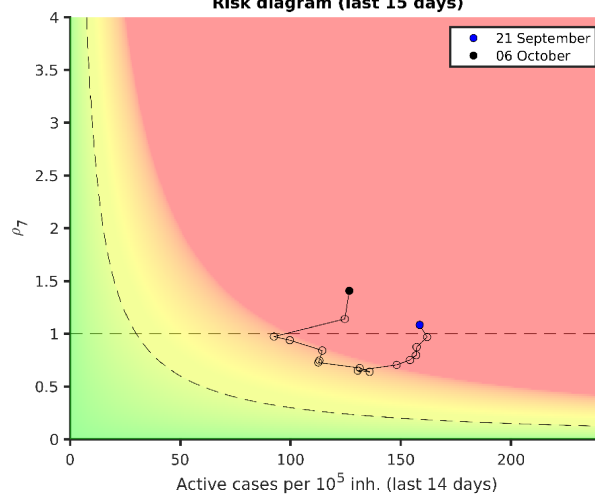
Actual $\rho_7 = 1.4$



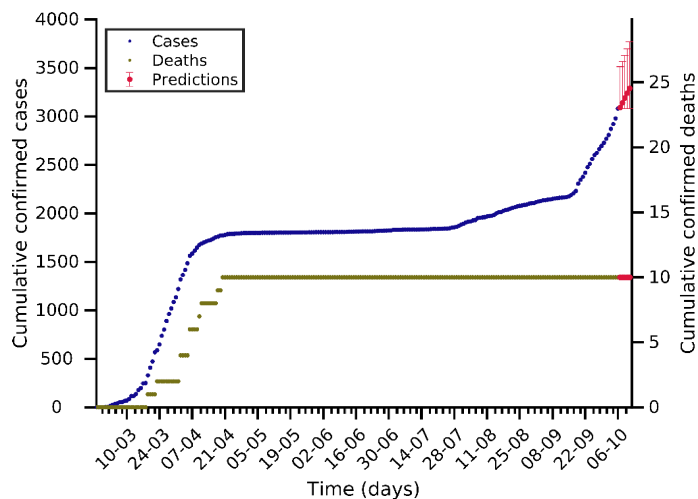
Risk diagram



Risk diagram (last 15 days)



Iceland 06-10-2020. Pop: 0.3M. Cumulative incidence: 903/10⁵

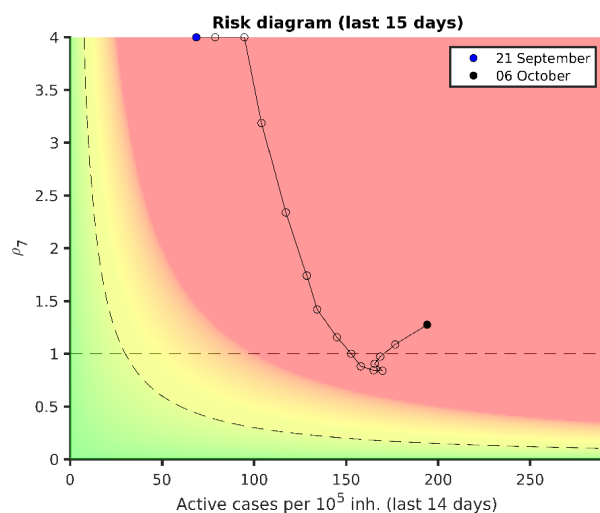
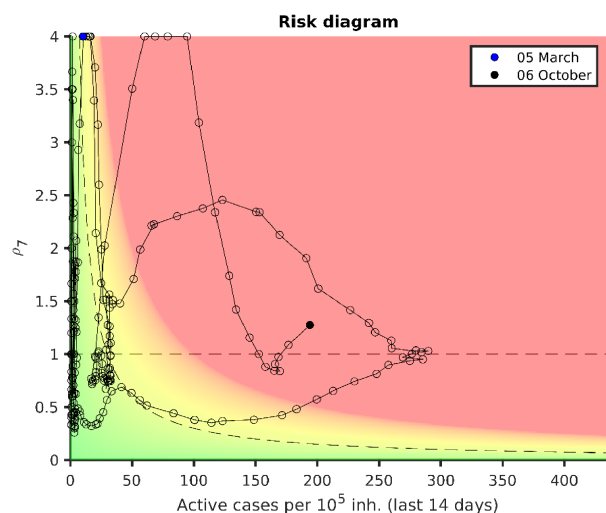
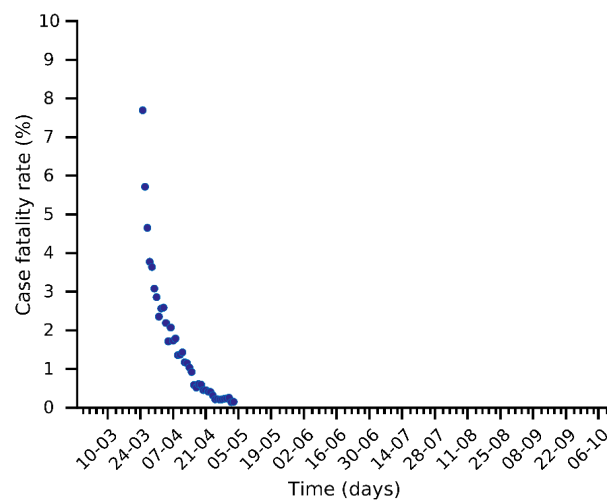
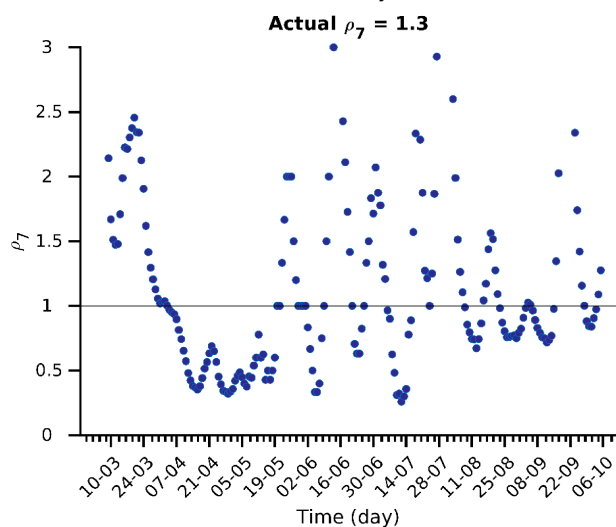
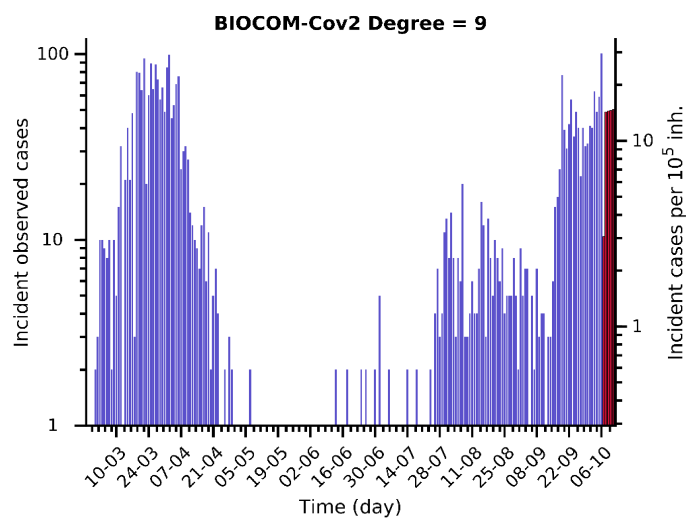
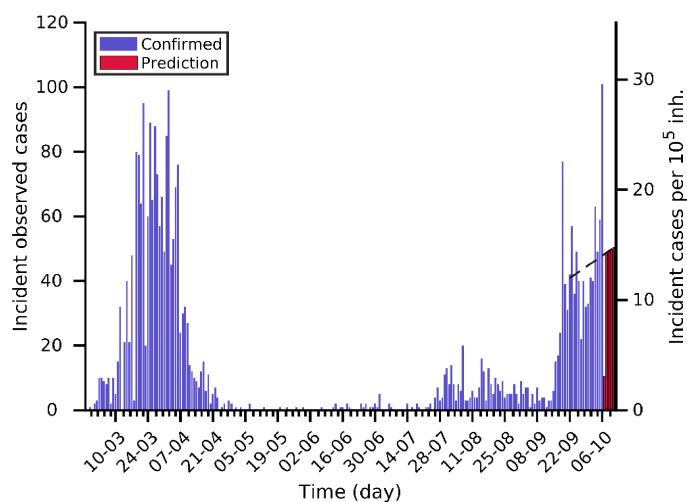


Predictions for next days

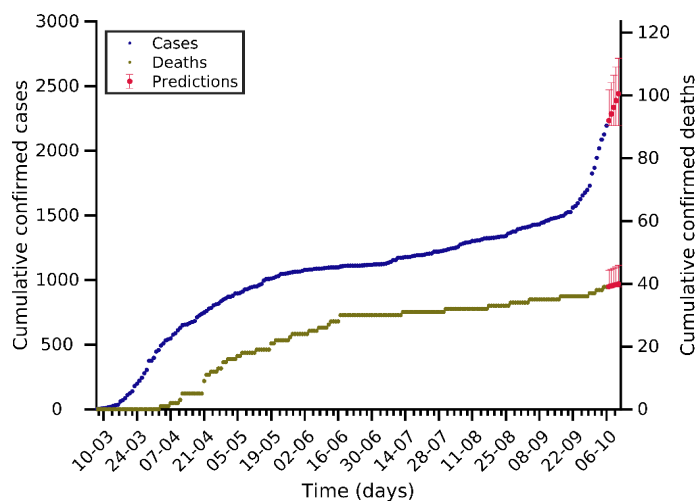
Day	Number of cases	95% Confidence Interval
07-10-2020	3091 (+10)	[3081 - 3512]
09-10-2020	3190 (+49)	[3081 - 3629]
11-10-2020	3290 (+50)	[3081 - 3771]

Current indicators

A ₁₄	EPG	CFR
194	247	0.00 %



Latvia 06-10-2020. Pop: 1.9M. Cumulative incidence: 116/10⁵

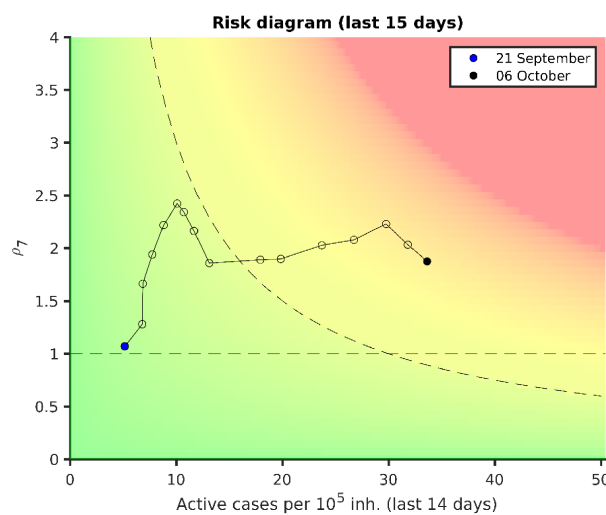
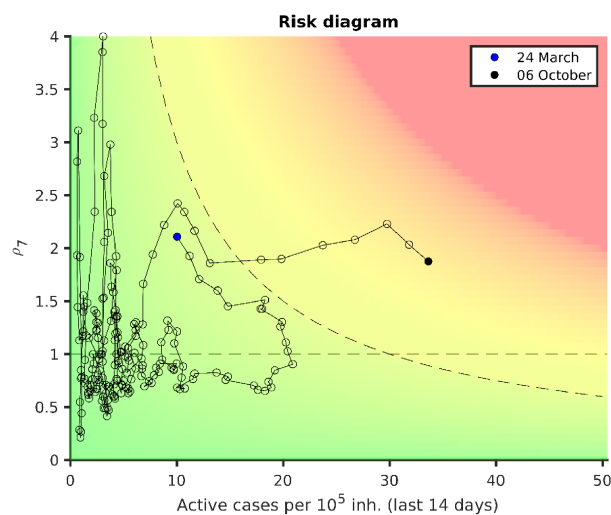
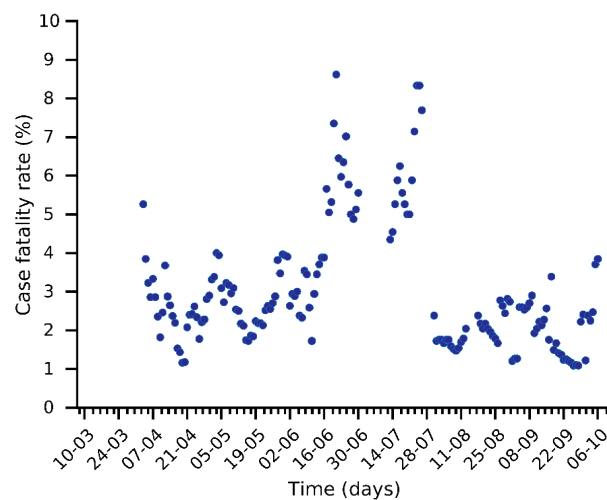
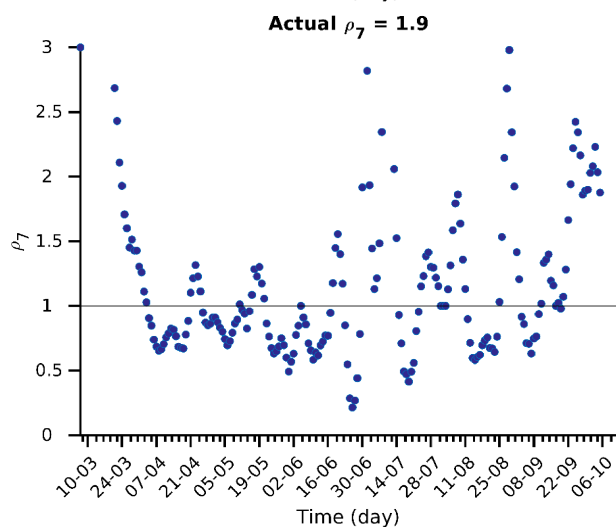
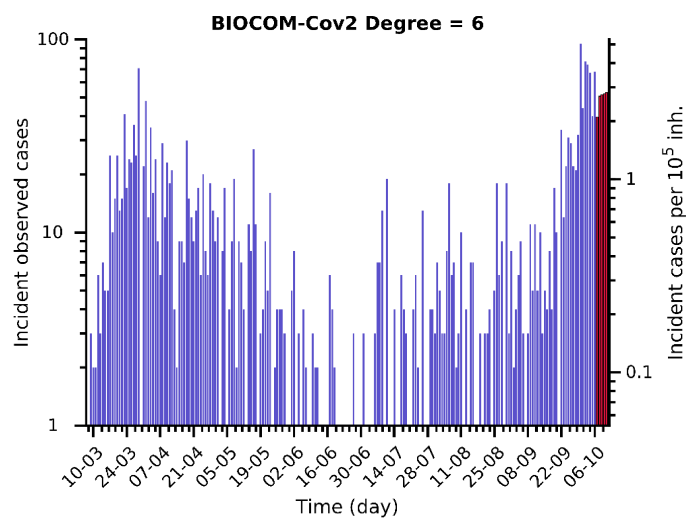
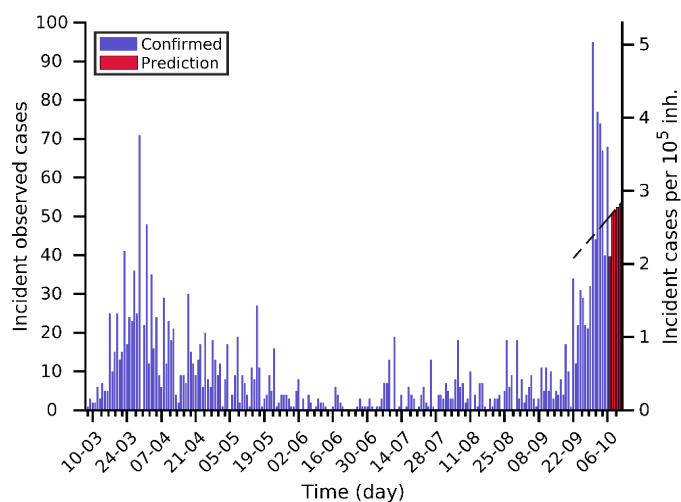


Predictions for next days

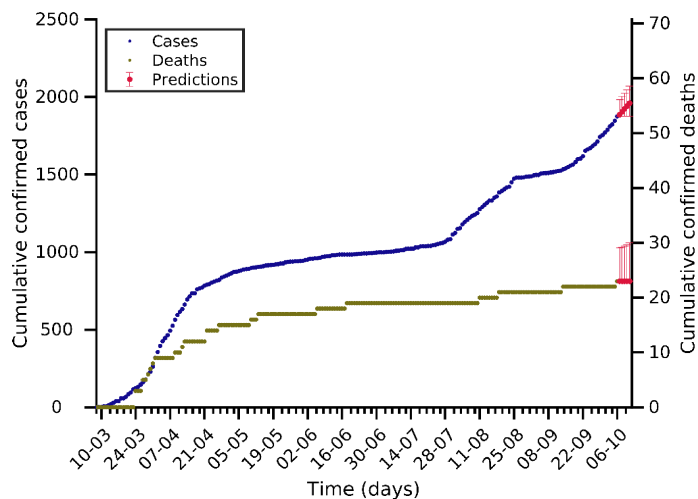
Day	Number of cases	95% Confidence Interval
07-10-2020	2234 (+40)	[2194 - 2472]
09-10-2020	2336 (+52)	[2194 - 2585]
11-10-2020	2441 (+53)	[2194 - 2716]

Current indicators

A ₁₄	EPG	CFR
34	63	3.85 %



Cyprus 06-10-2020. Pop: 1.2M. Cumulative incidence: 155/10⁵

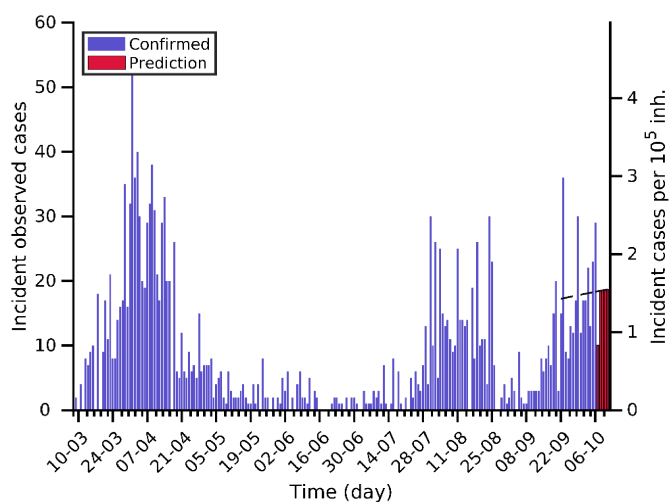


Predictions for next days

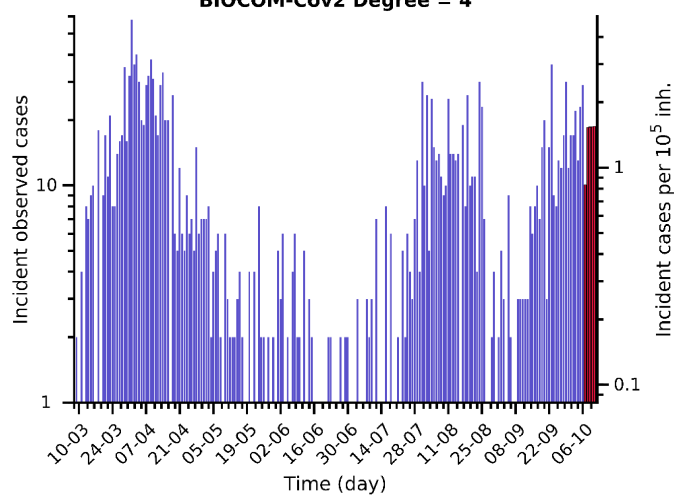
Day	Number of cases	95% Confidence Interval
07-10-2020	1886 (+10)	[1876 - 1983]
09-10-2020	1923 (+19)	[1876 - 2024]
11-10-2020	1960 (+19)	[1876 - 2070]

Current indicators

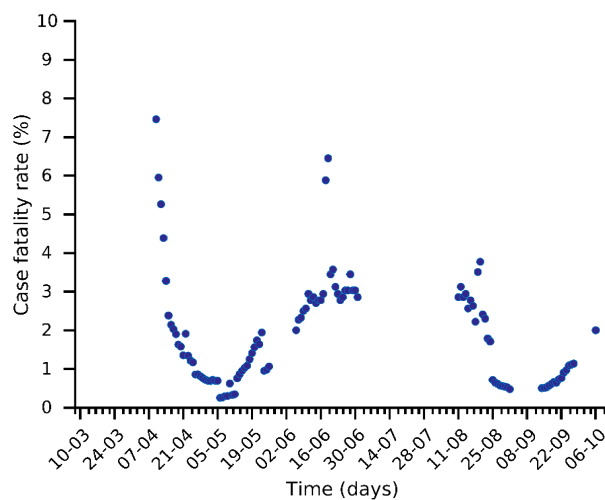
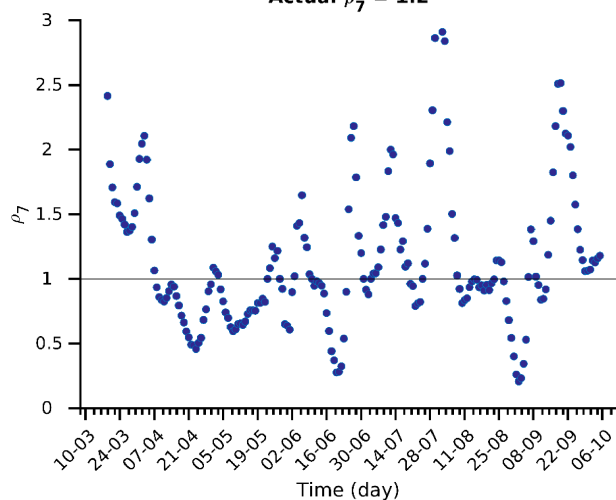
A ₁₄	EPG	CFR
21	25	2.00 %



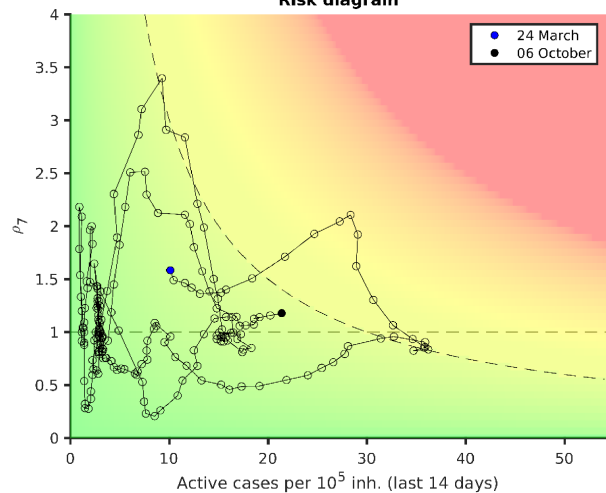
BIOCOM-Cov2 Degree = 4



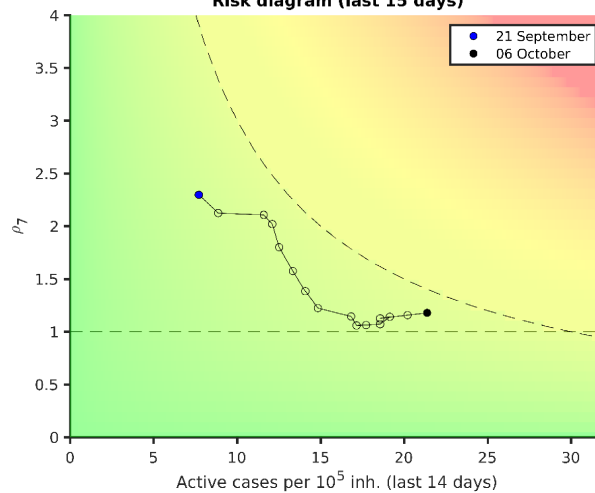
Actual $\rho_7 = 1.2$



Risk diagram

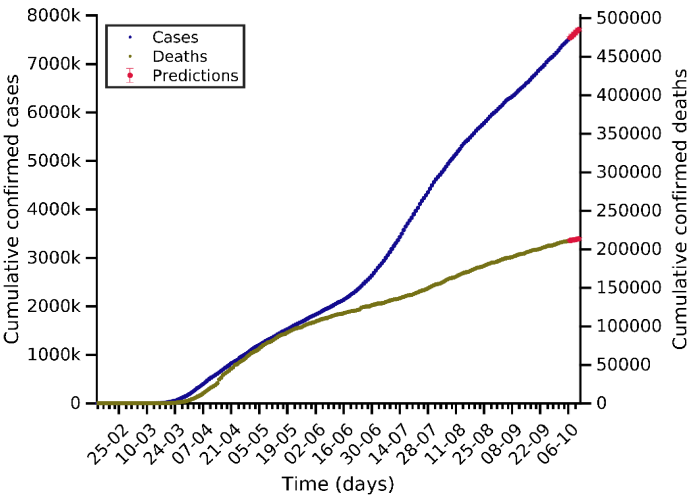


Risk diagram (last 15 days)



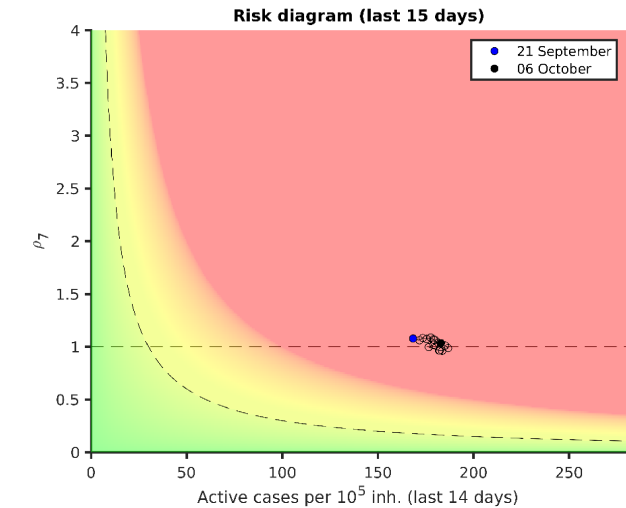
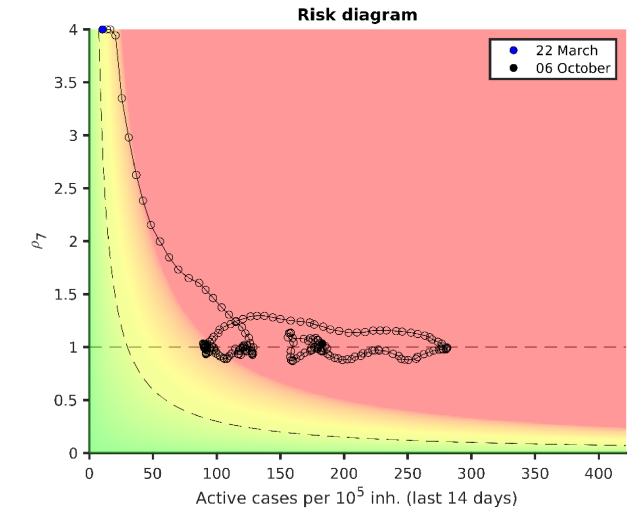
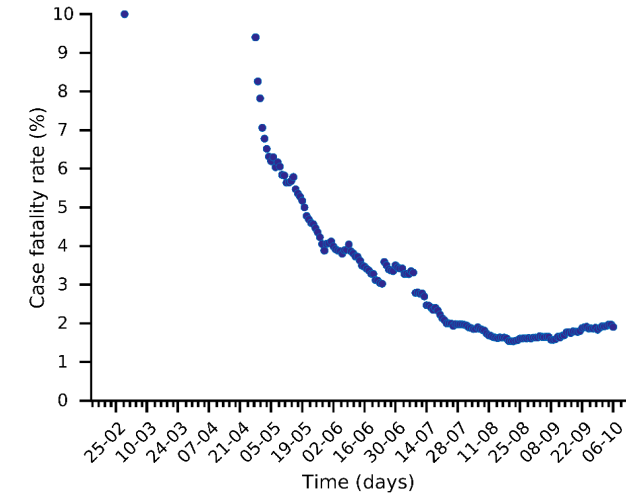
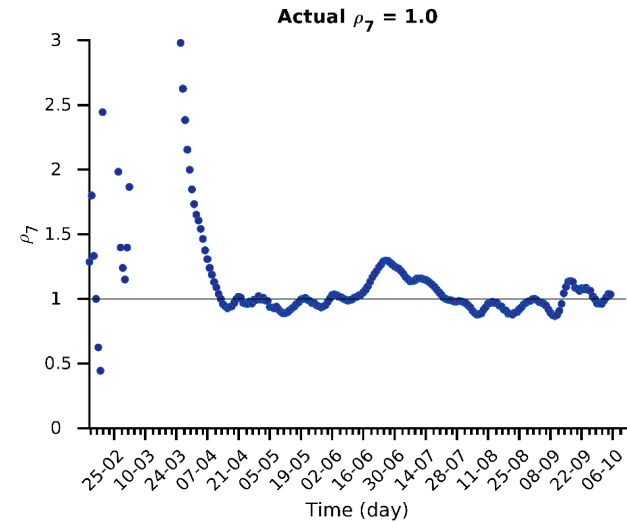
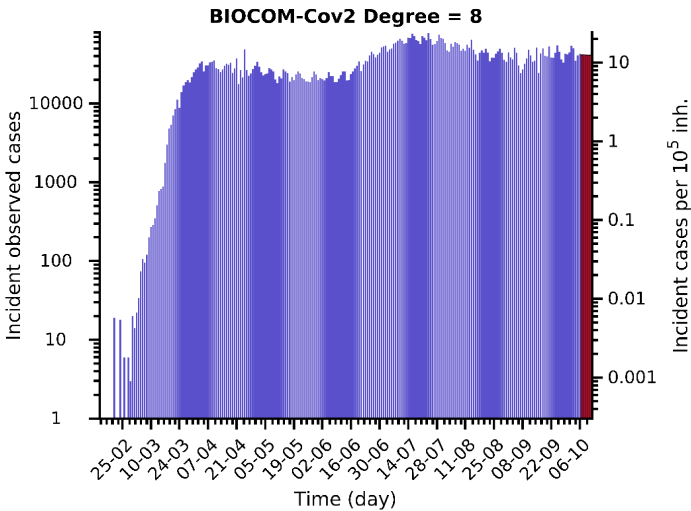
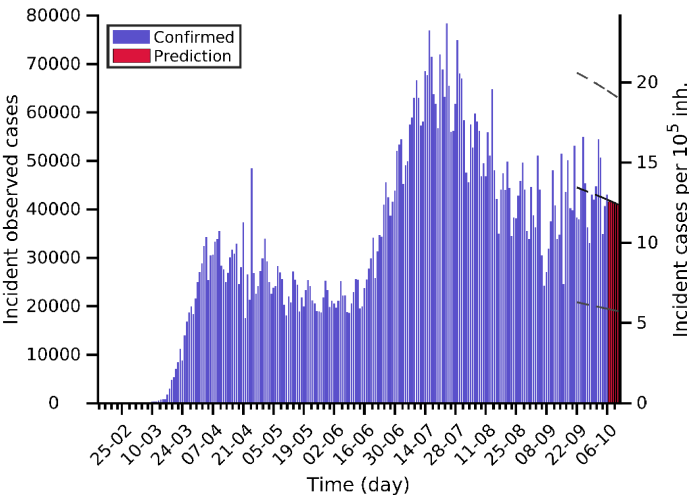
(2) Analysis and prediction of COVID-19 for other countries

USA 06-10-2020. Pop: 331.0M. Cumulative incidence: 2266/10⁵

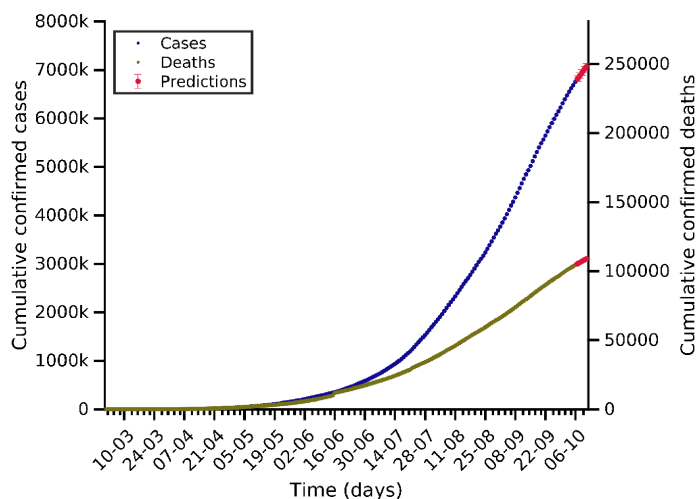


Predictions for next days		
Day	Number of cases	95% Confidence Interval
07-10-2020	7543170 (+41558)	[7517412 - 7568928]
09-10-2020	7626262 (+41449)	[7599525 - 7653000]
11-10-2020	7708571 (+41056)	[7679767 - 7737375]

Current indicators		
A ₁₄	EPG	CFR
183	189	1.90 %



India 06-10-2020. Pop: 1353.0M. Cumulative incidence: 499/10⁵

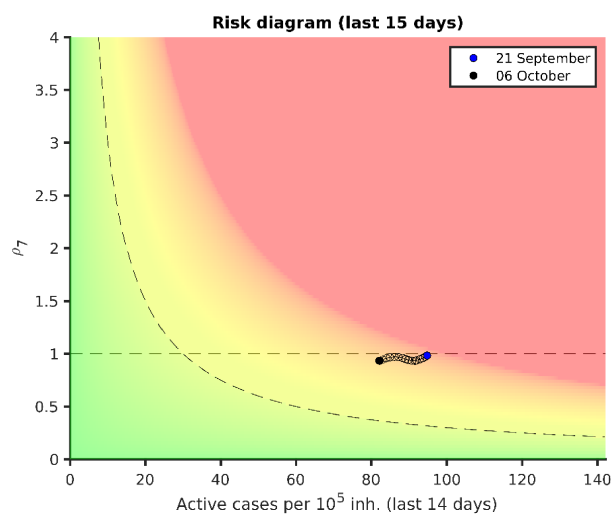
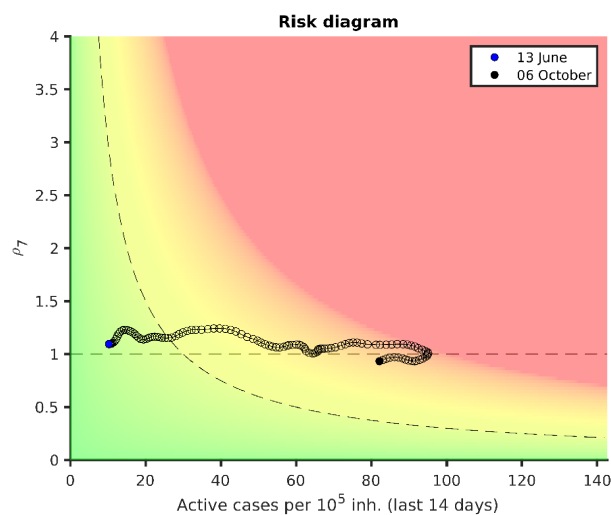
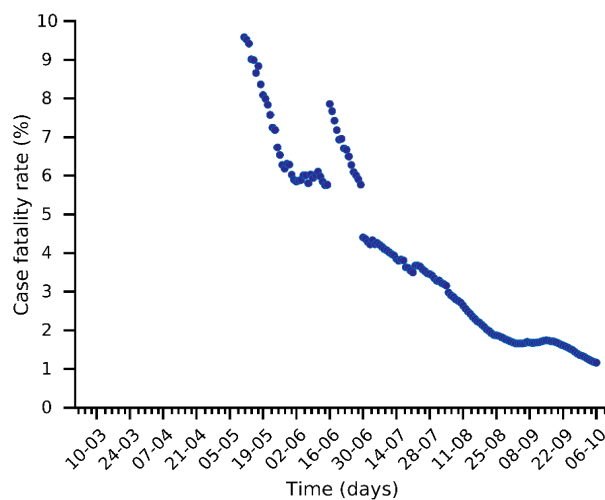
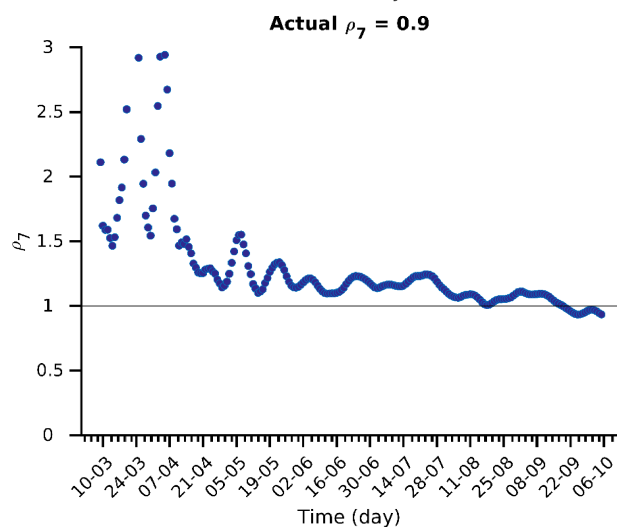
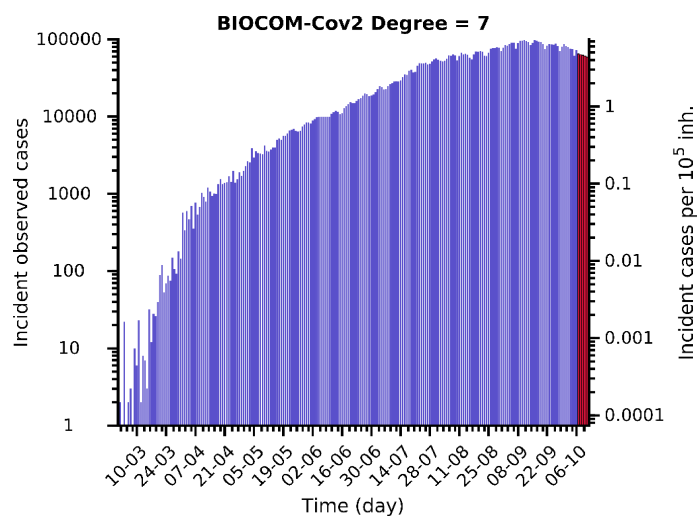
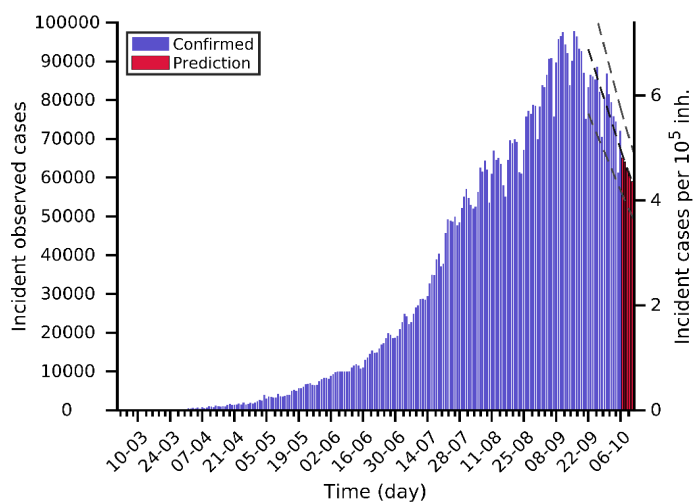


Predictions for next days

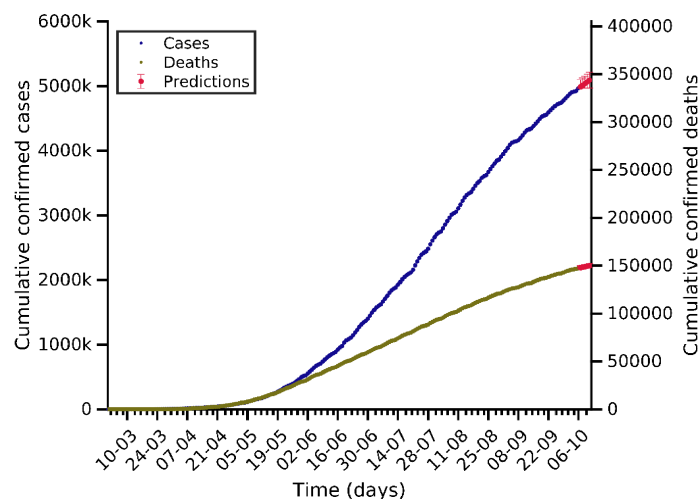
Day	Number of cases	95% Confidence Interval
07-10-2020	6822271 (+65140)	[6764739 - 6879803]
09-10-2020	6948624 (+62327)	[6889201 - 7008047]
11-10-2020	7068286 (+59008)	[7005122 - 7131451]

Current indicators

A ₁₄	EPG	CFR
82	77	1.16 %



Brazil 06-10-2020. Pop: 212.6M. Cumulative incidence: 2338/10⁵

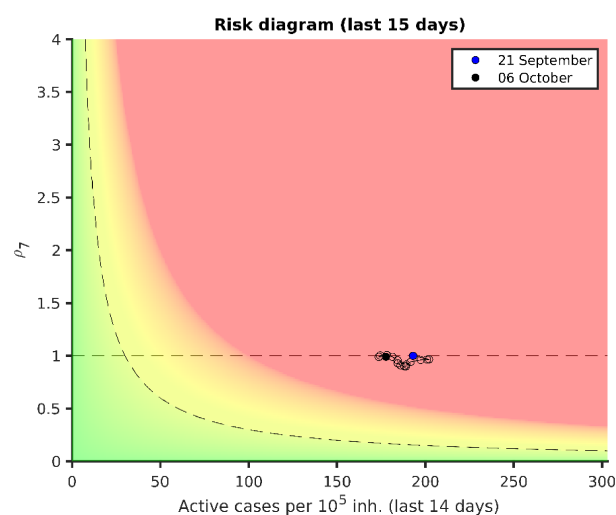
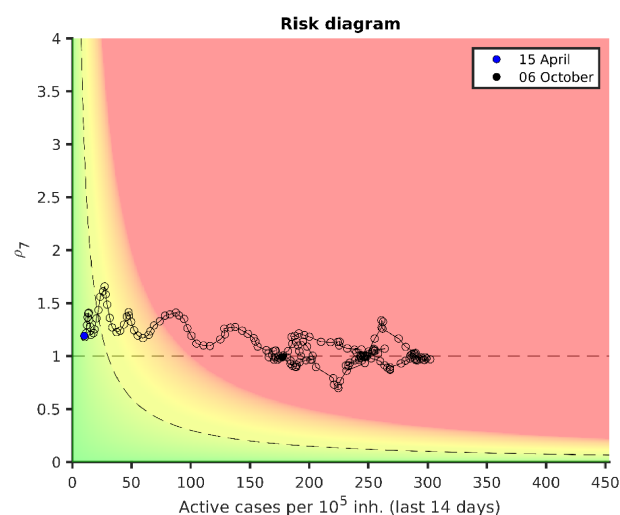
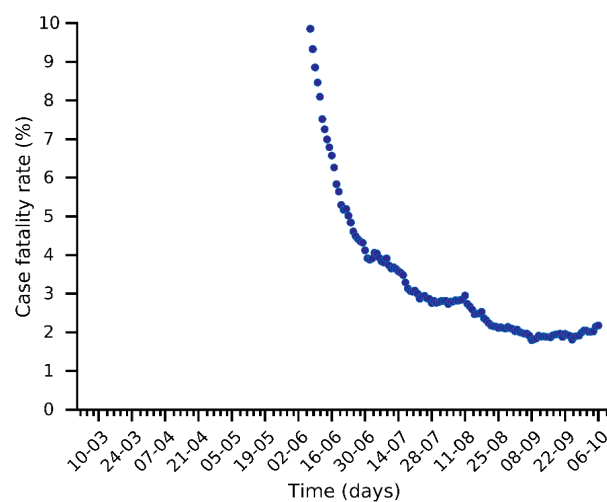
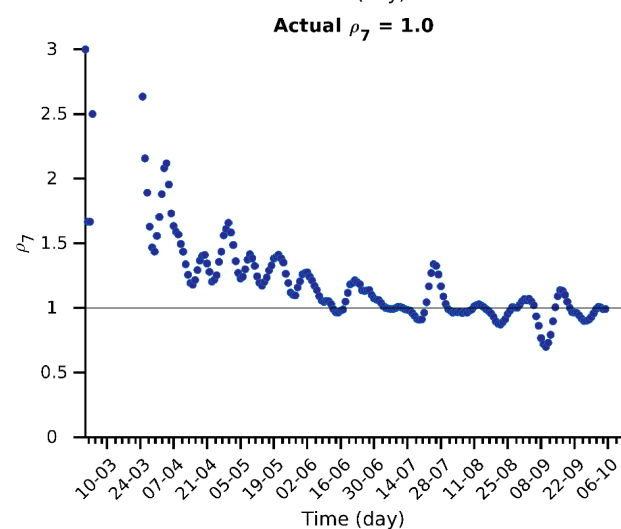
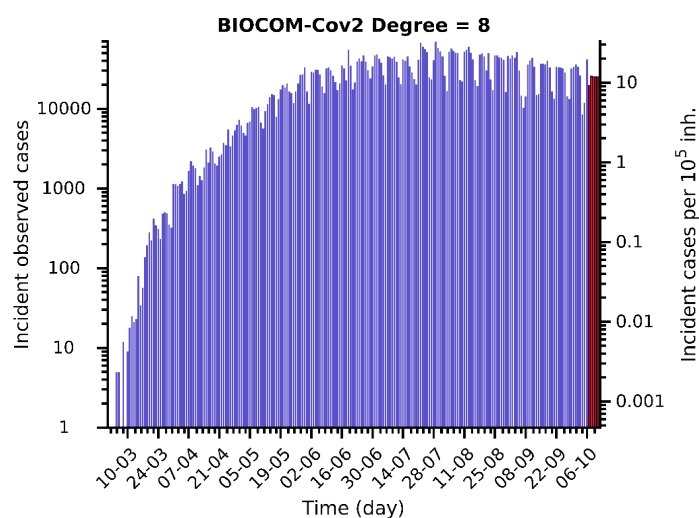
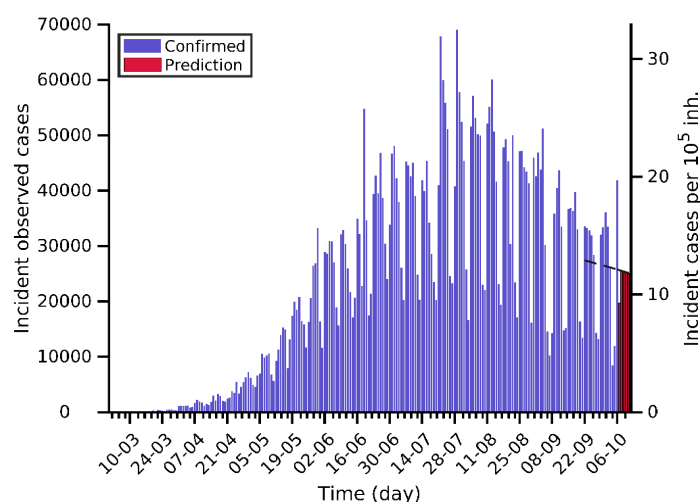


Predictions for next days

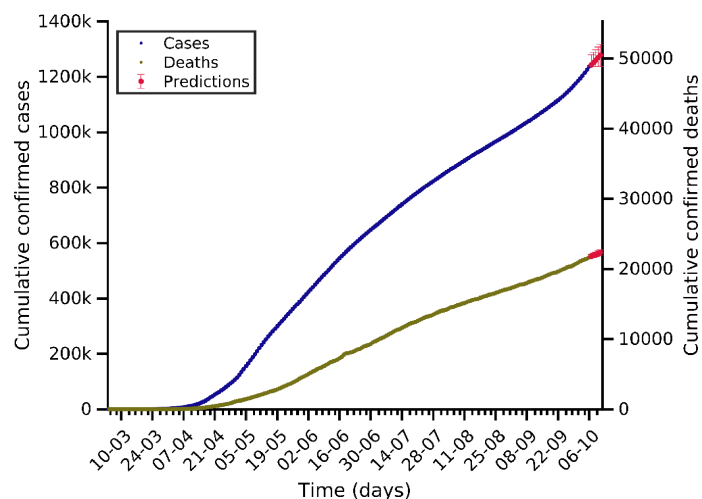
Day	Number of cases	95% Confidence Interval
07-10-2020	4988887 (+19746)	[4969141 - 5100043]
09-10-2020	5039784 (+25385)	[4969141 - 5155150]
11-10-2020	5090172 (+25130)	[4969141 - 5214410]

Current indicators

A ₁₄	EPG	CFR
178	176	2.18 %



Russia 06-10-2020. Pop: 145.9M. Cumulative incidence: 848/10⁵

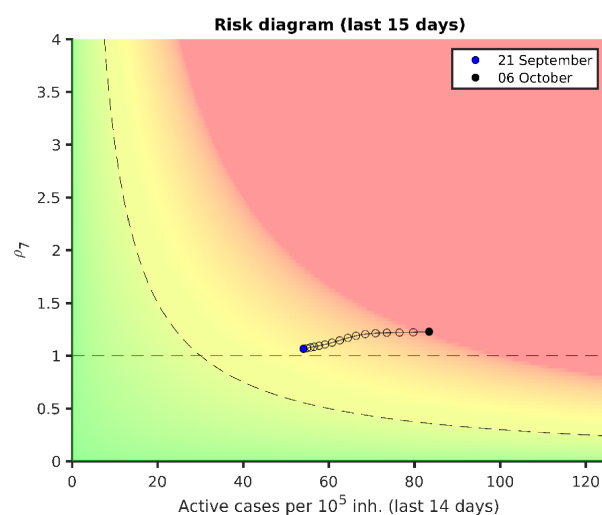
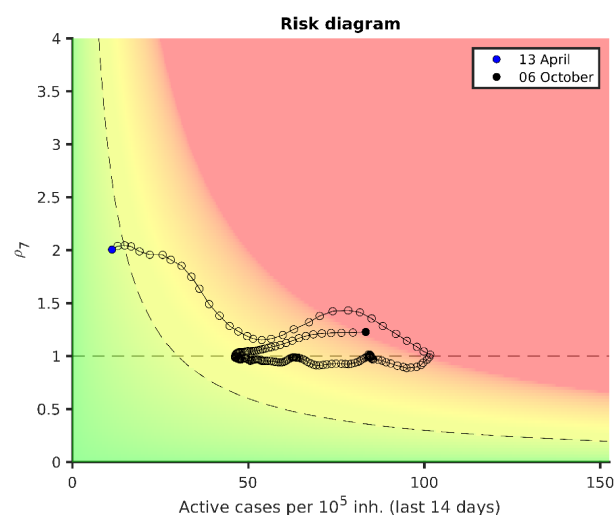
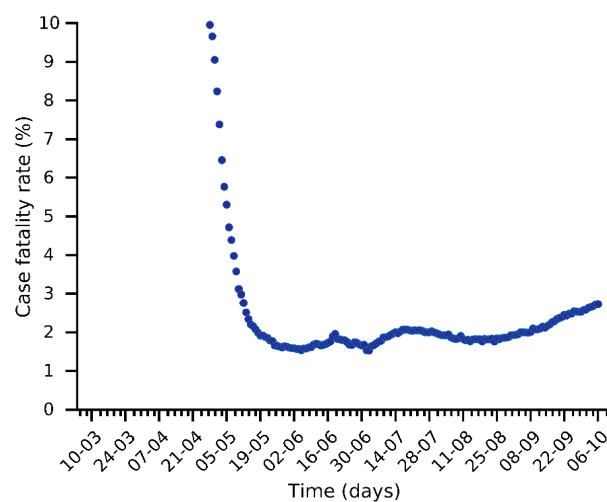
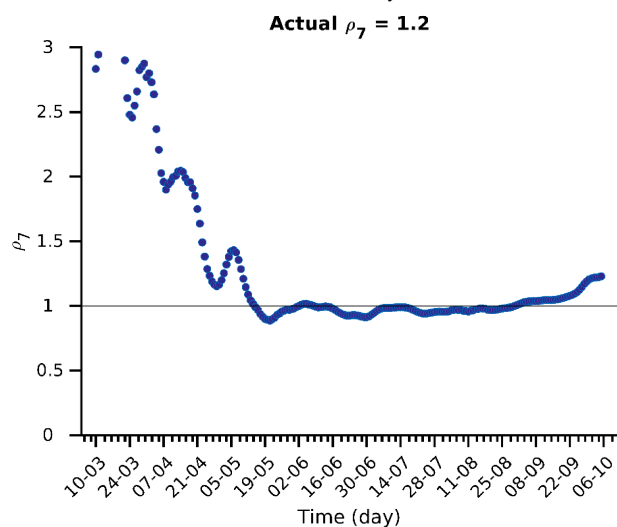
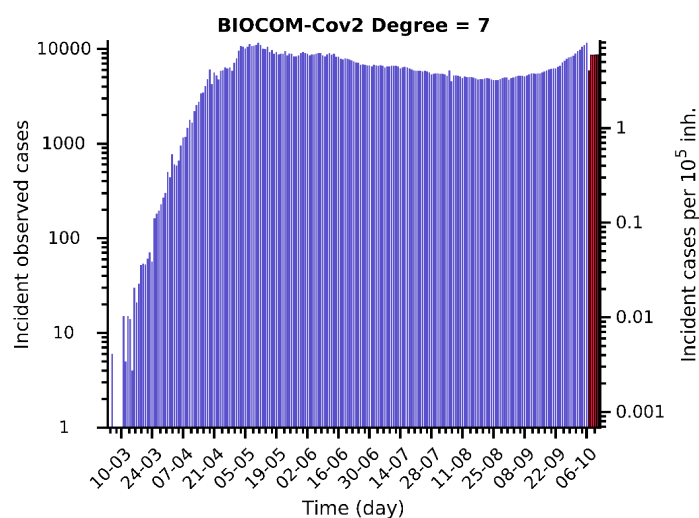
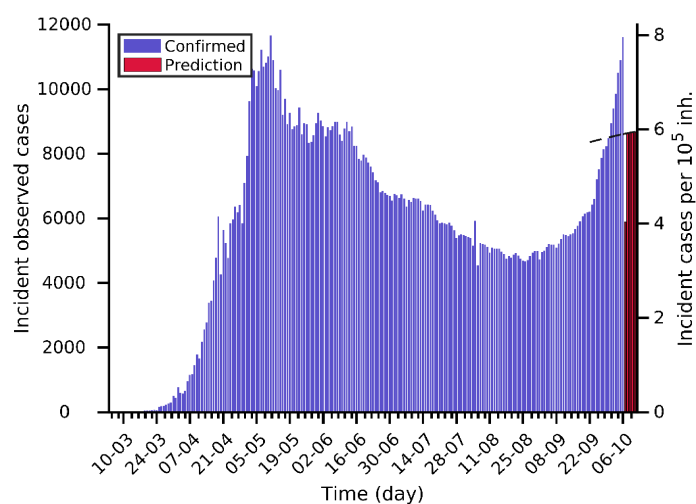


Predictions for next days

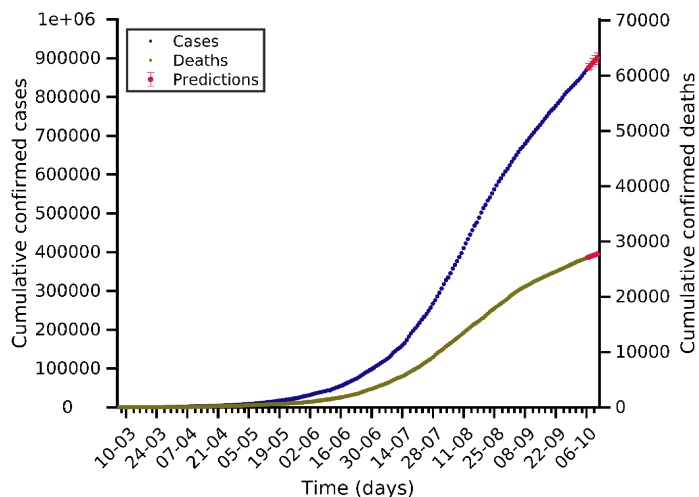
Day	Number of cases	95% Confidence Interval
07-10-2020	1243388 (+5884)	[1237504 - 1279043]
09-10-2020	1260676 (+8651)	[1237504 - 1297762]
11-10-2020	1278022 (+8680)	[1237852 - 1318192]

Current indicators

A ₁₄	EPG	CFR
83	102	2.73 %



Colombia 06-10-2020. Pop: 50.9M. Cumulative incidence: 1709/10⁵

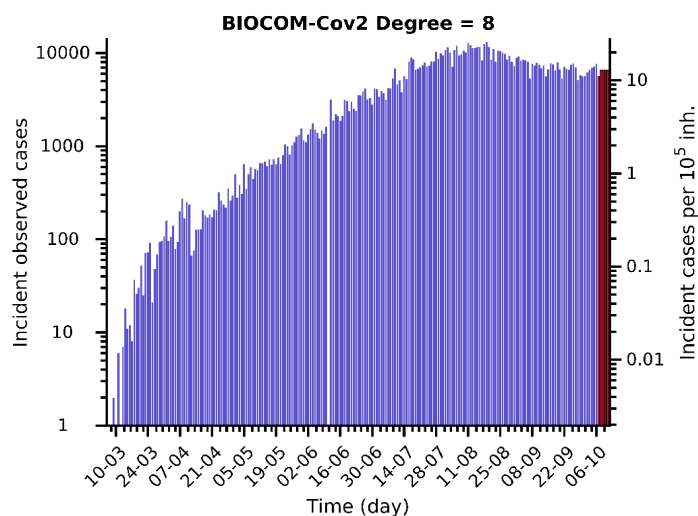
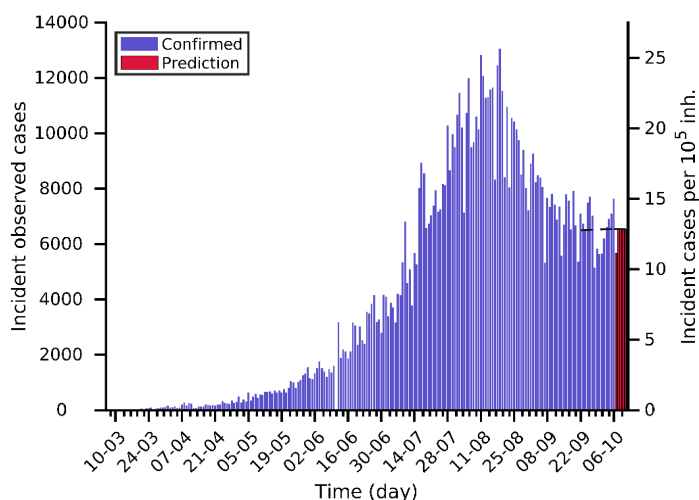


Predictions for next days

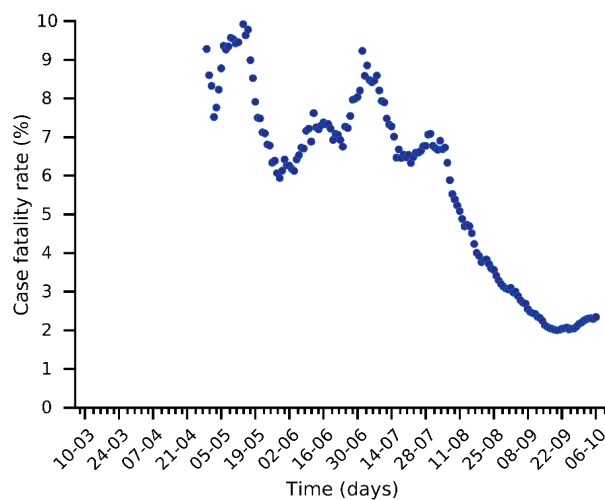
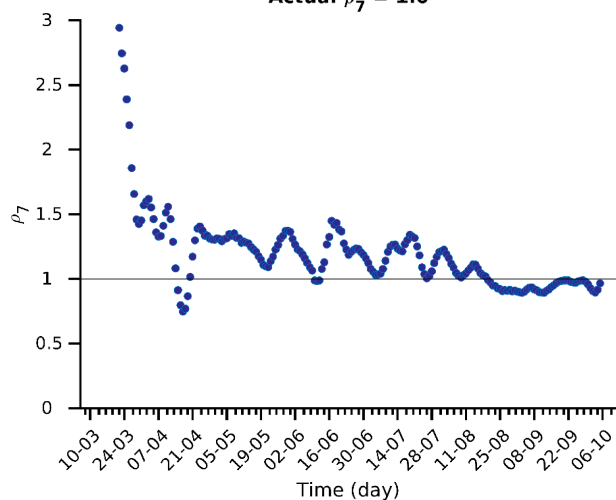
Day	Number of cases	95% Confidence Interval
07-10-2020	875465 (+5657)	[869808 - 886427]
09-10-2020	888553 (+6544)	[877155 - 899950]
11-10-2020	901639 (+6543)	[889307 - 913970]

Current indicators

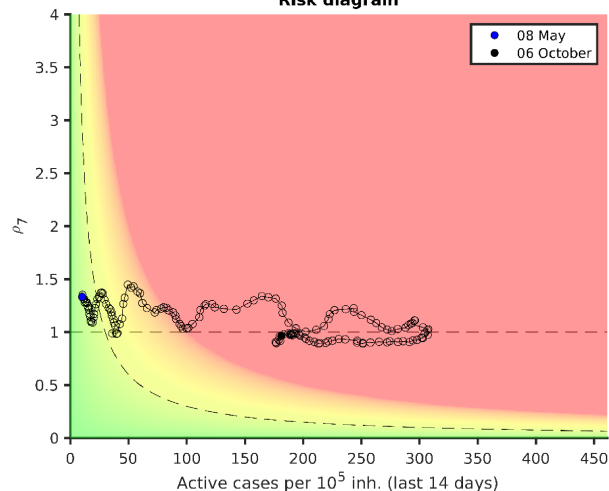
A ₁₄	EPG	CFR
181	175	2.34 %



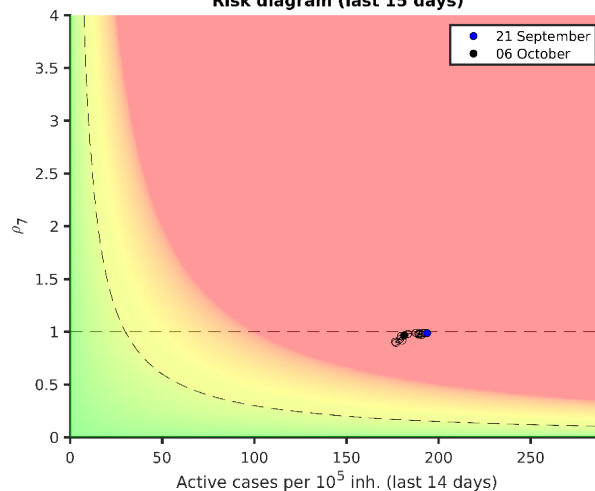
Actual $\rho_7 = 1.0$



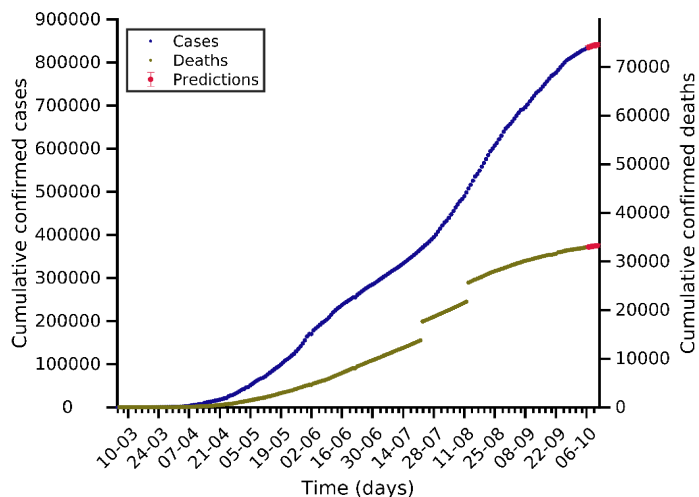
Risk diagram



Risk diagram (last 15 days)



Peru 06-10-2020. Pop: 33.0M. Cumulative incidence: 2526/10⁵

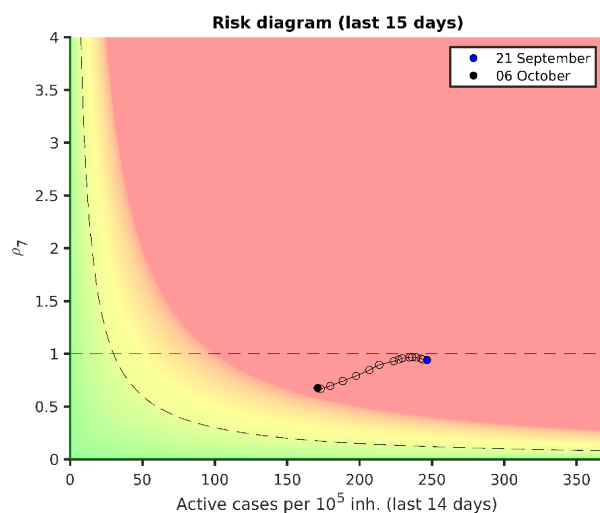
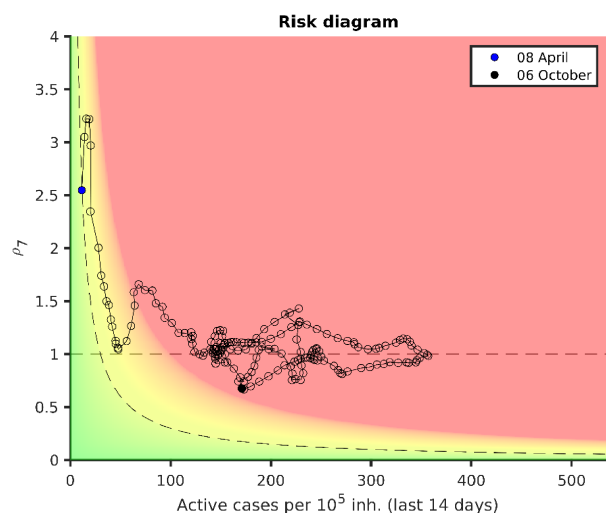
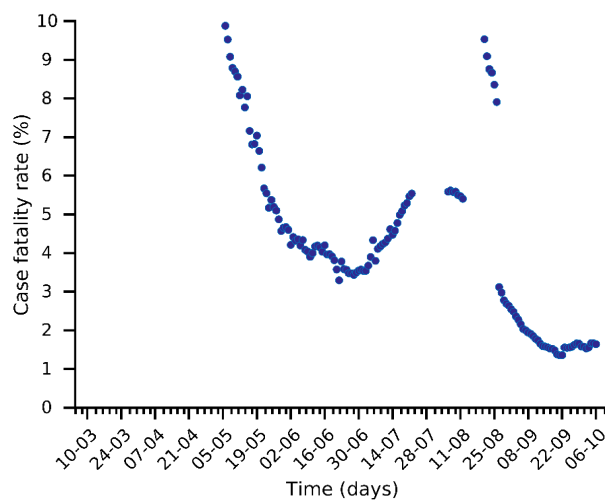
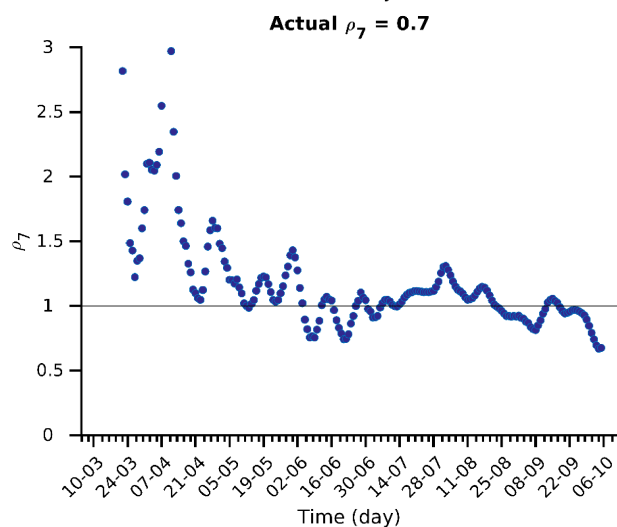
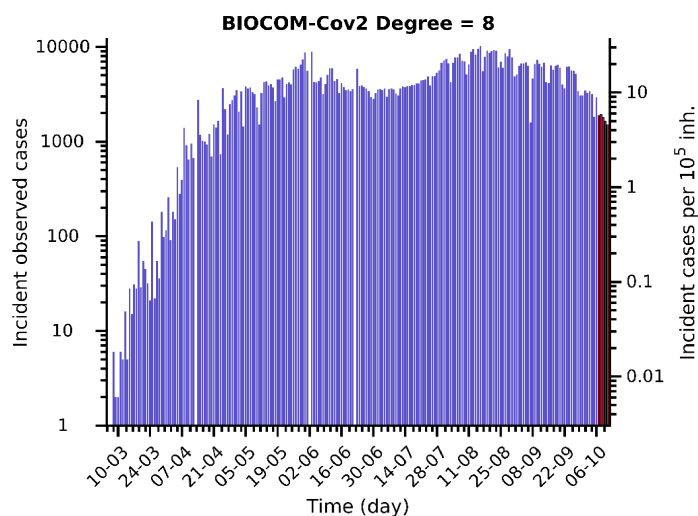
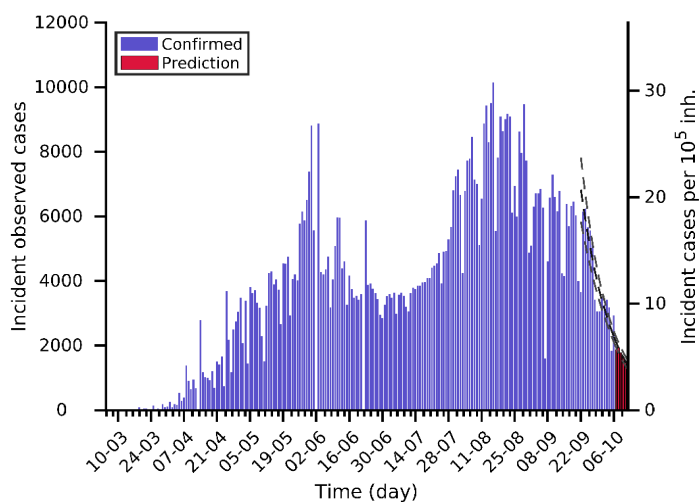


Predictions for next days

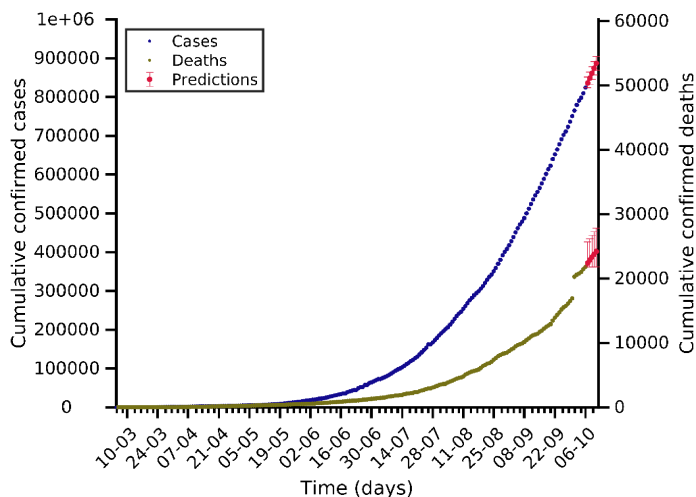
Day	Number of cases	95% Confidence Interval
07-10-2020	834799 (+1870)	[832929 - 839716]
09-10-2020	838516 (+1783)	[833499 - 843532]
11-10-2020	841672 (+1514)	[836492 - 846853]

Current indicators

A ₁₄	EPG	CFR
171	115	1.64 %



Argentina 06-10-2020. Pop: 45.2M. Cumulative incidence: 1824/10⁵

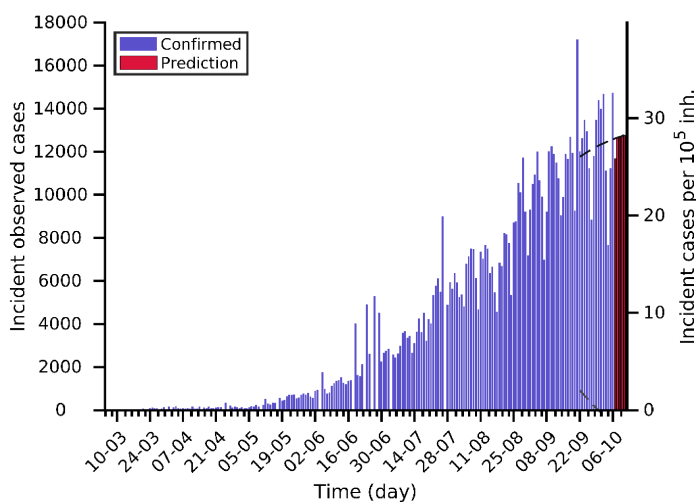


Predictions for next days

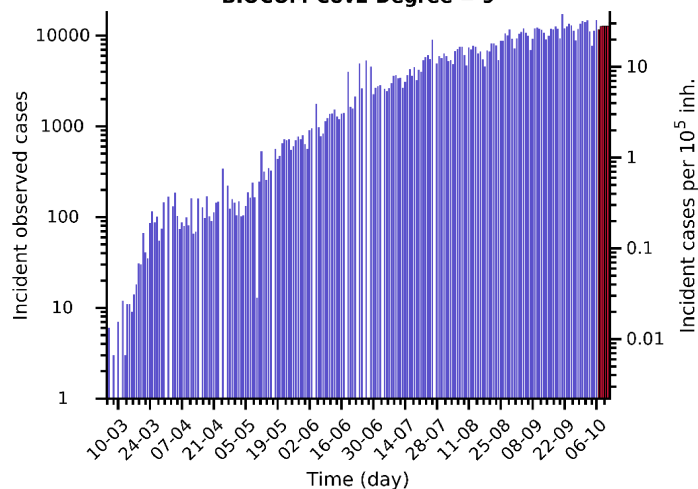
Day	Number of cases	95% Confidence Interval
07-10-2020	836139 (+11684)	[824455 - 851863]
09-10-2020	861501 (+12700)	[845117 - 877884]
11-10-2020	887003 (+12768)	[869177 - 904829]

Current indicators

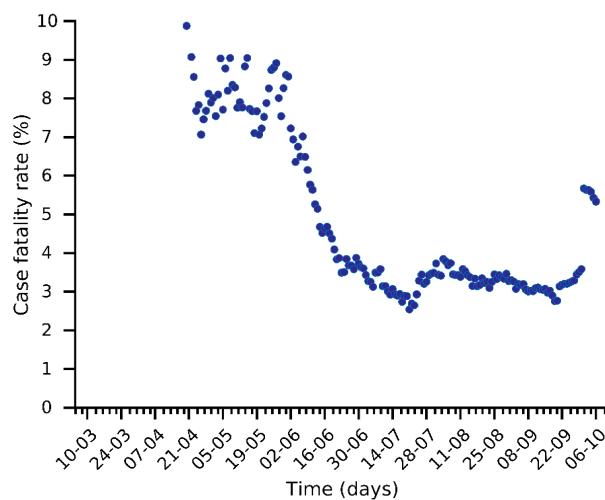
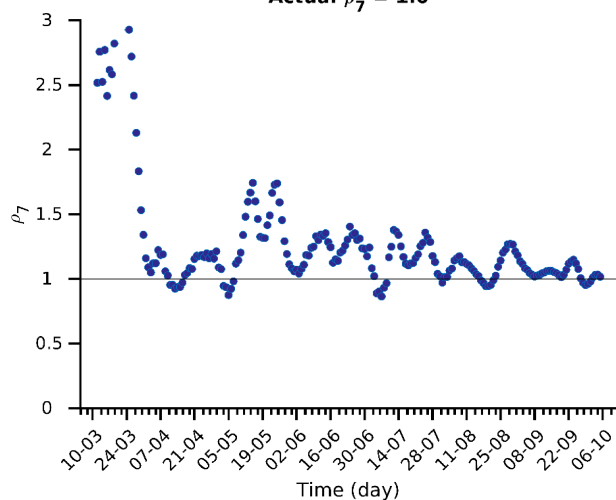
A ₁₄	EPG	CFR
381	388	5.33 %



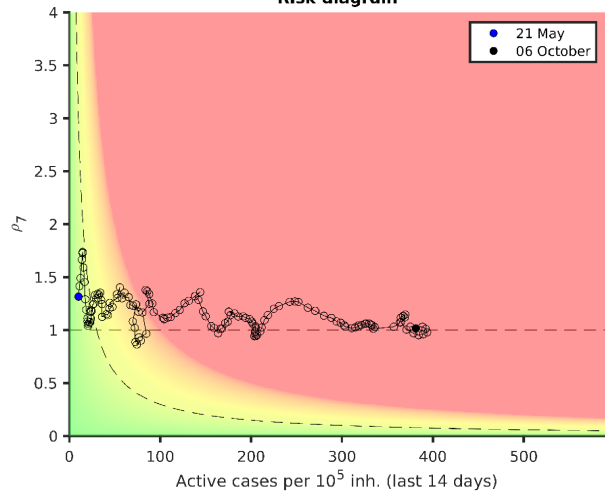
BIOCOM-Cov2 Degree = 9



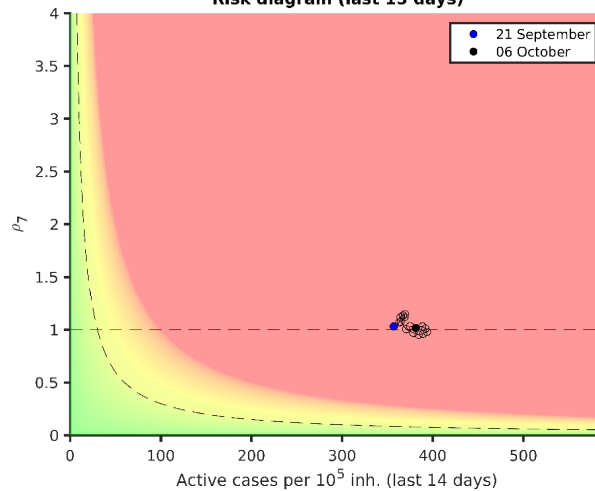
Actual $\rho_7 = 1.0$



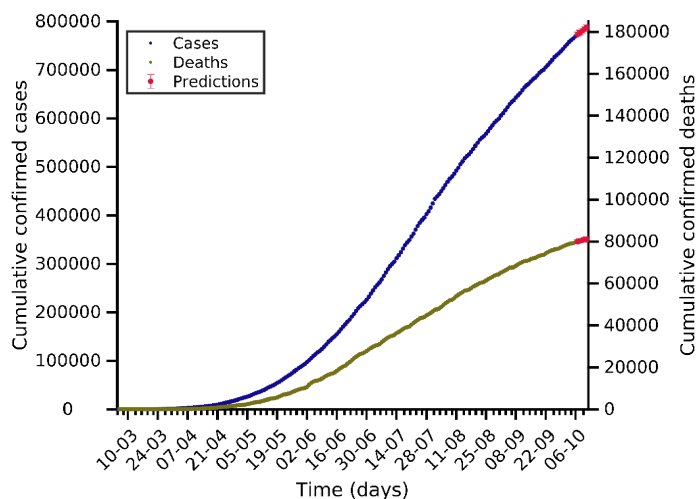
Risk diagram



Risk diagram (last 15 days)



Mexico 06-10-2020. Pop: 128.9M. Cumulative incidence: 597/10⁵

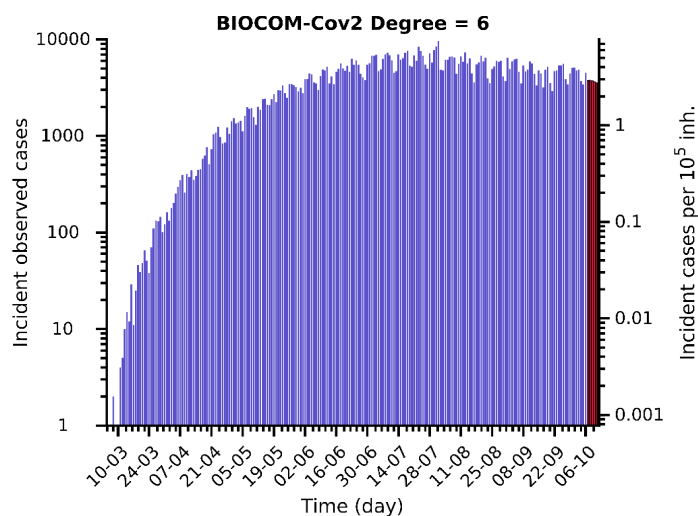
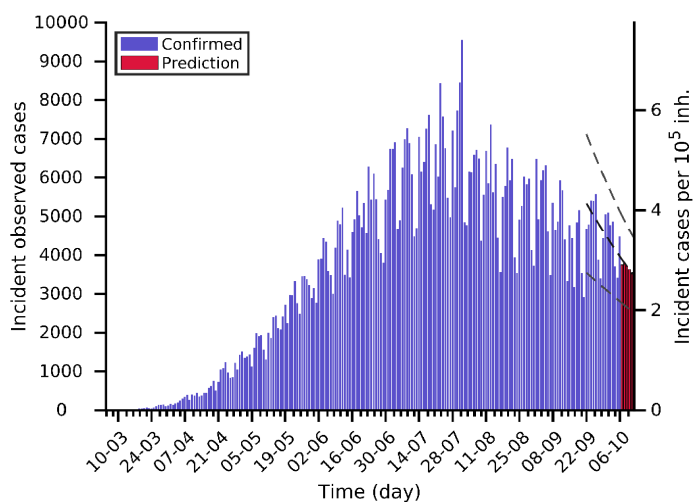


Predictions for next days

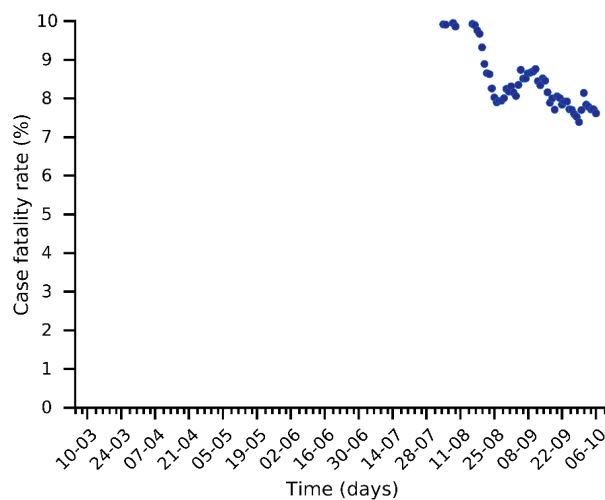
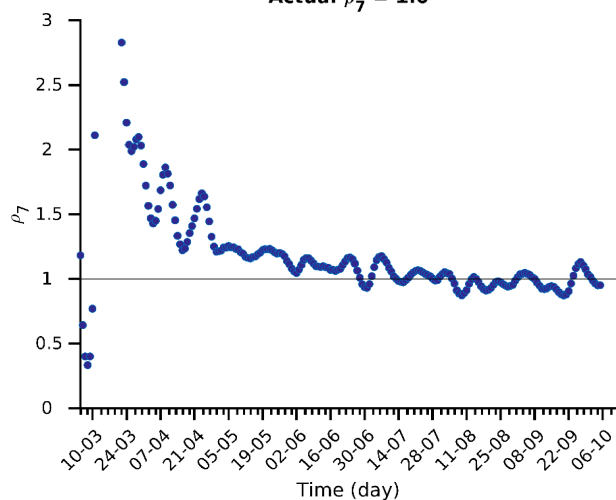
Day	Number of cases	95% Confidence Interval
07-10-2020	773309 (+3751)	[769558 - 777930]
09-10-2020	780816 (+3711)	[776042 - 785591]
11-10-2020	787990 (+3546)	[782911 - 793070]

Current indicators

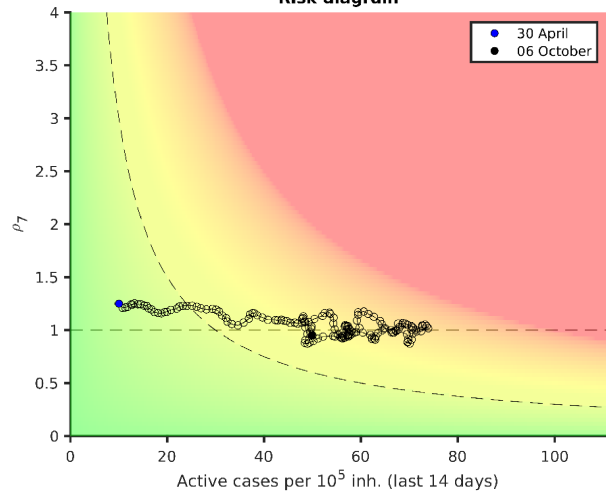
A ₁₄	EPG	CFR
50	47	7.62 %



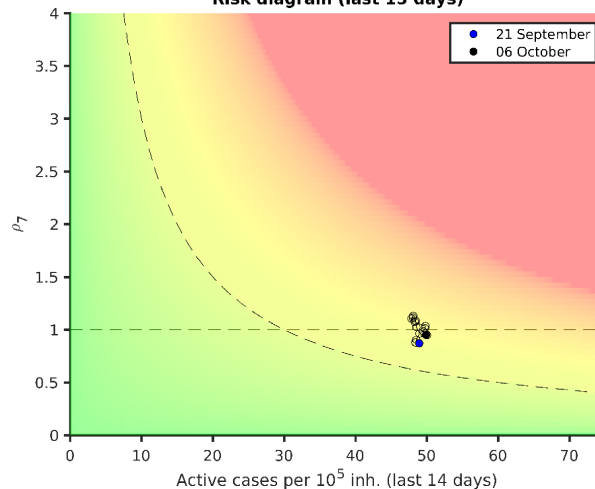
Actual $\rho_7 = 1.0$



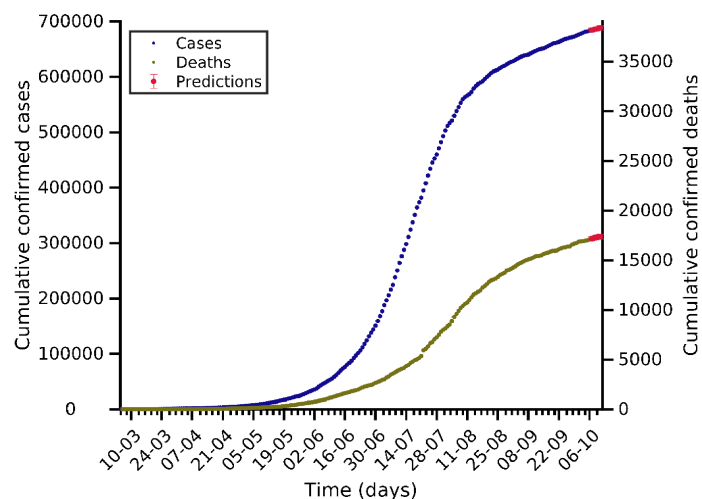
Risk diagram



Risk diagram (last 15 days)



South Africa 06-10-2020. Pop: 59.3M. Cumulative incidence: 1152/10⁵

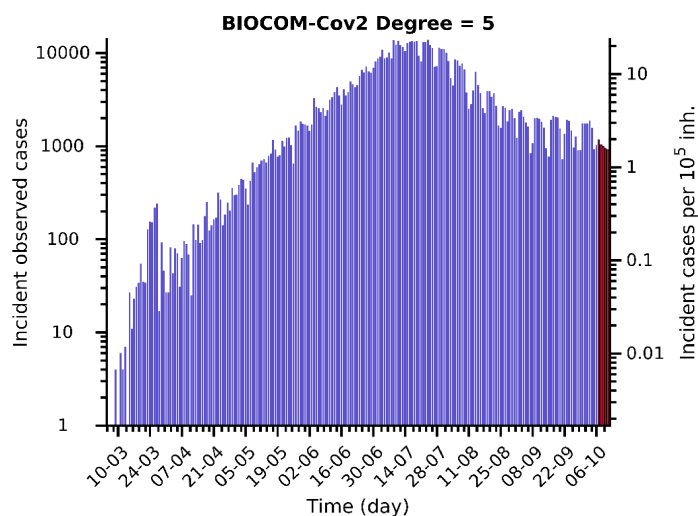
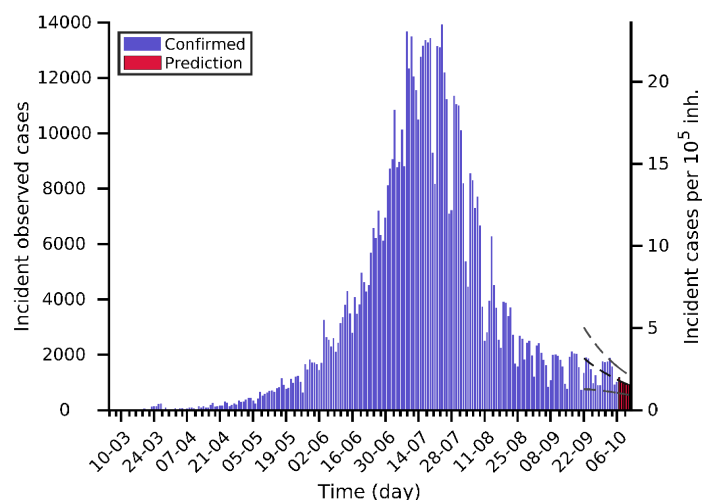


Predictions for next days

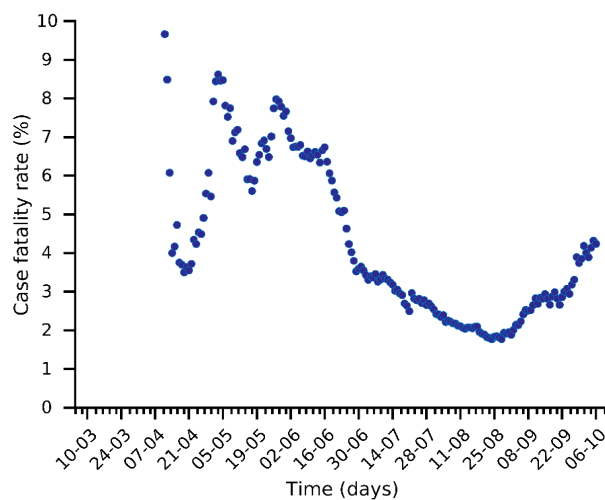
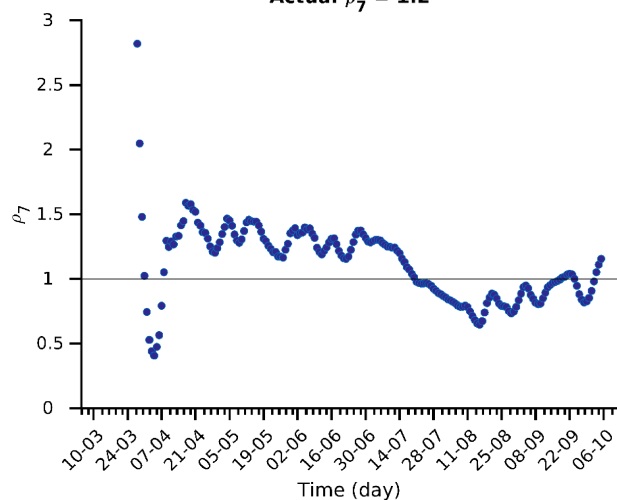
Day	Number of cases	95% Confidence Interval
07-10-2020	684416 (+1174)	[683242 - 688014]
09-10-2020	686434 (+990)	[683242 - 690135]
11-10-2020	688304 (+917)	[684408 - 692201]

Current indicators

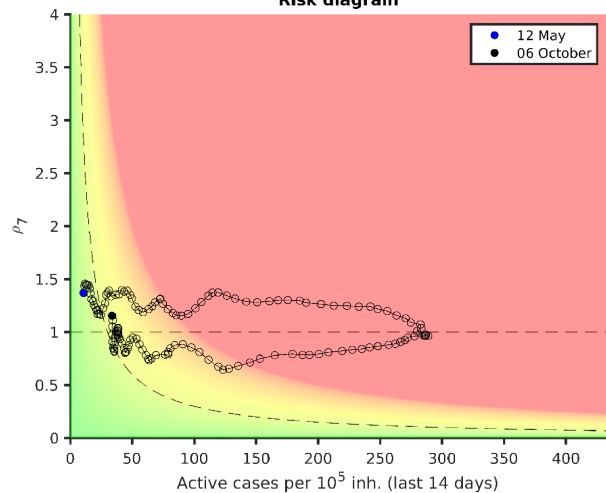
A ₁₄	EPG	CFR
34	39	4.23 %



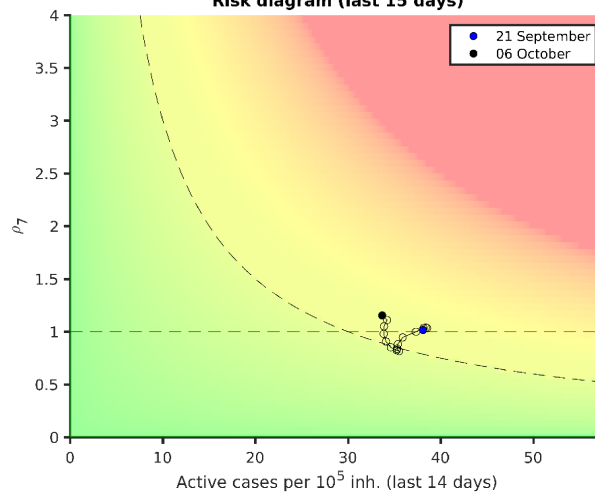
Actual $\rho_7 = 1.2$



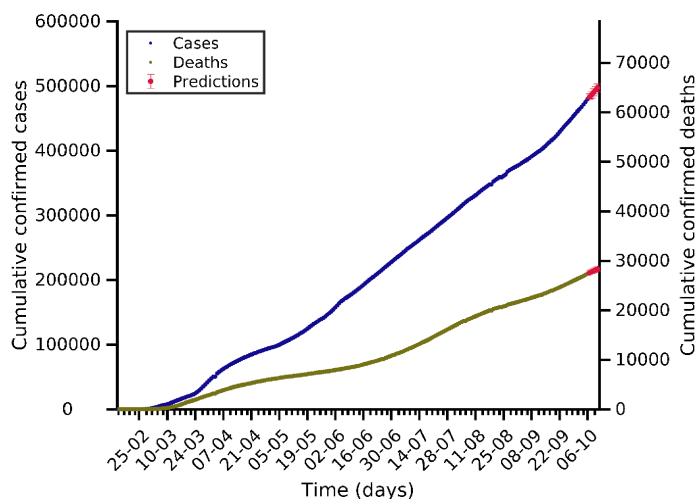
Risk diagram



Risk diagram (last 15 days)



Iran 06-10-2020. Pop: 84.0M. Cumulative incidence: 571/10⁵

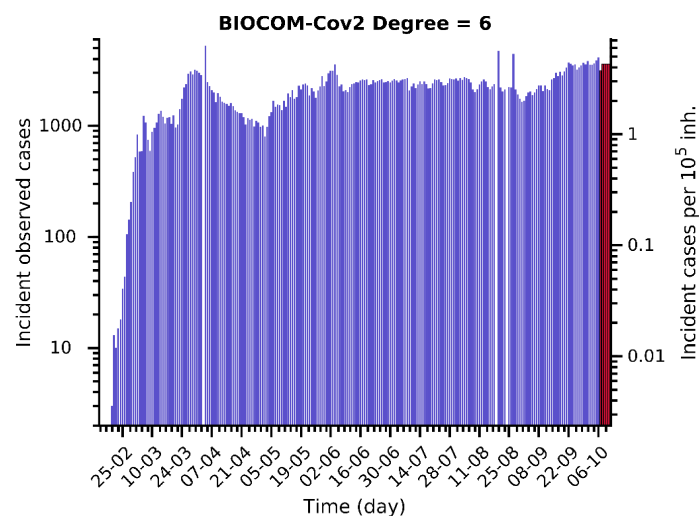
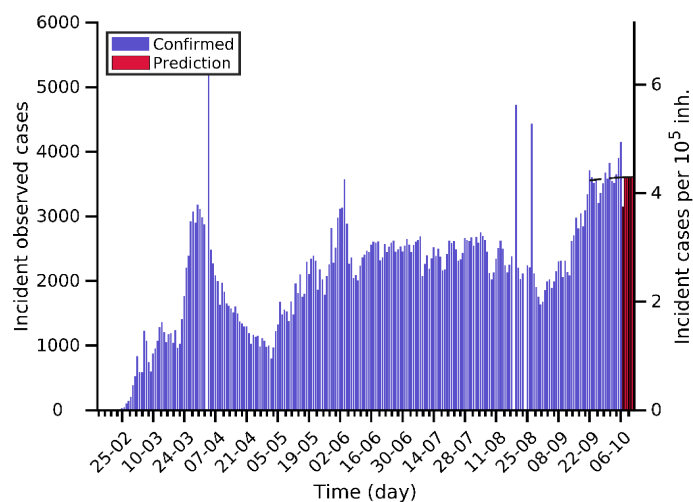


Predictions for next days

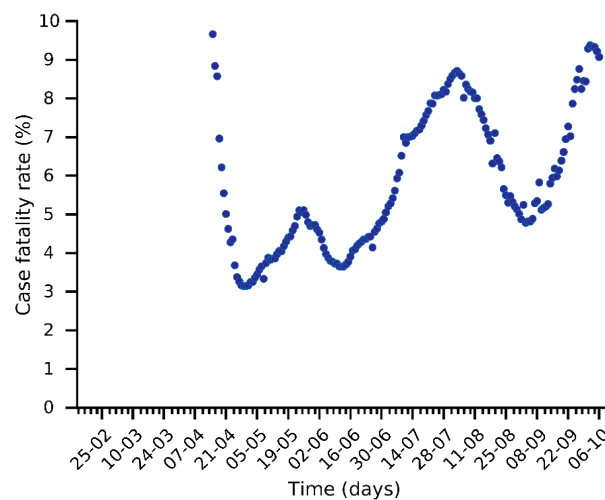
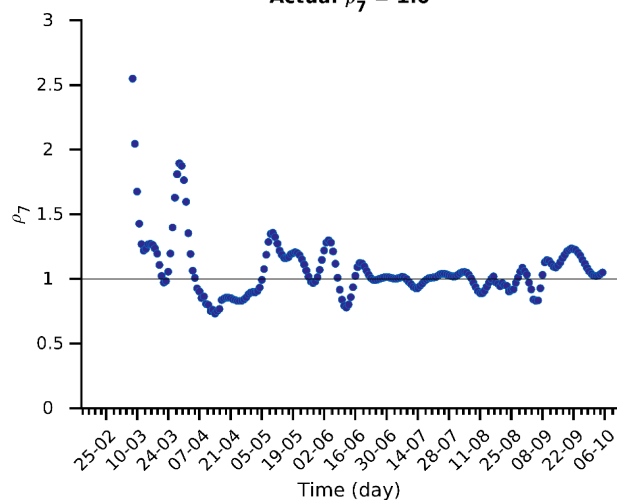
Day	Number of cases	95% Confidence Interval
07-10-2020	482975 (+3150)	[479825 - 488266]
09-10-2020	490189 (+3608)	[484687 - 495690]
11-10-2020	497408 (+3610)	[491453 - 503363]

Current indicators

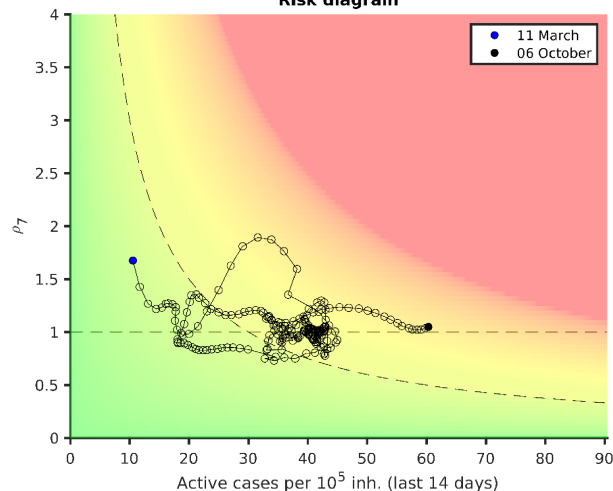
A ₁₄	EPG	CFR
60	63	9.07 %



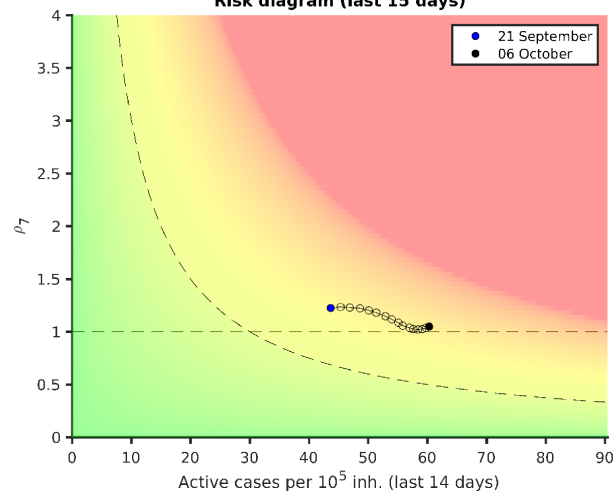
Actual $\rho_7 = 1.0$



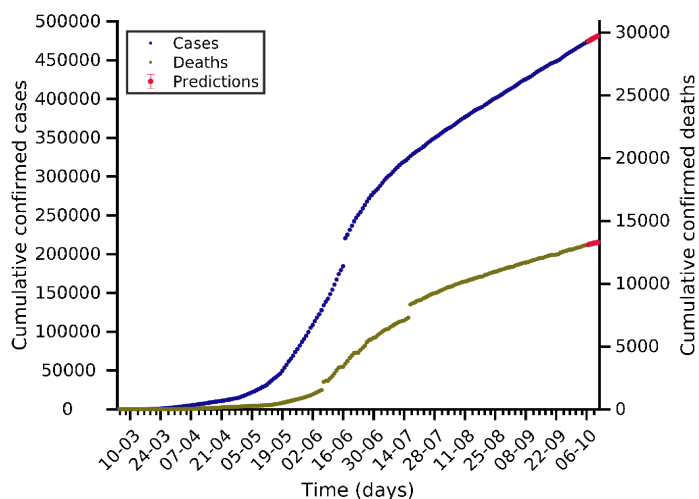
Risk diagram



Risk diagram (last 15 days)



Chile 06-10-2020. Pop: 19.1M. Cumulative incidence: 2476/10⁵

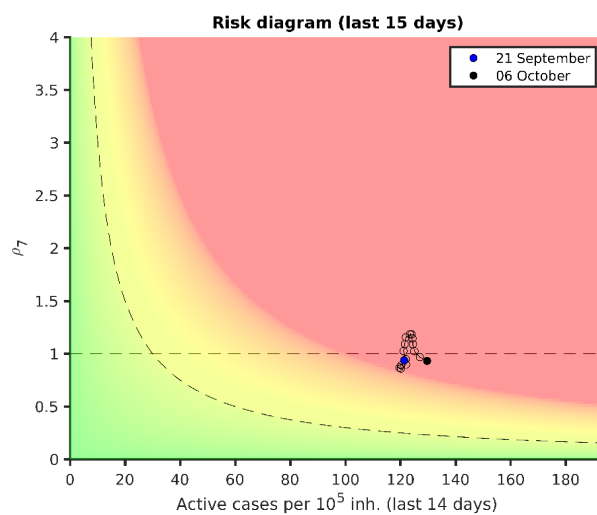
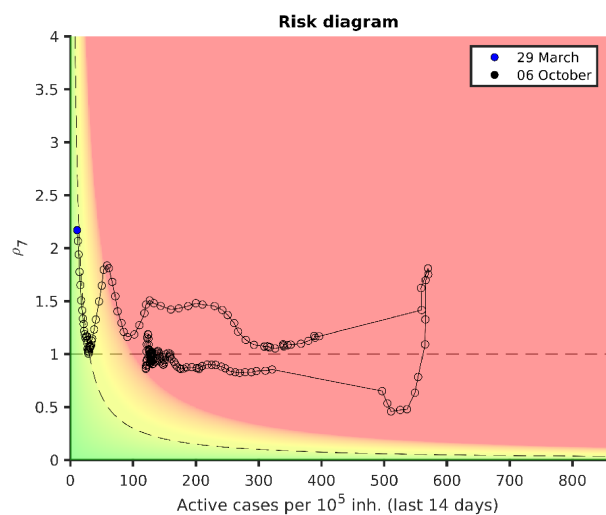
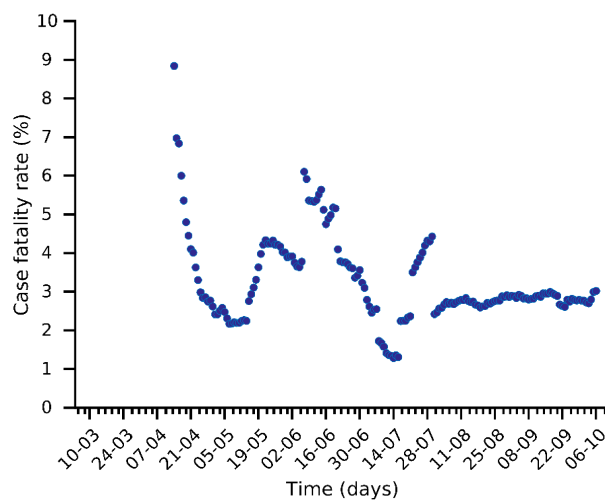
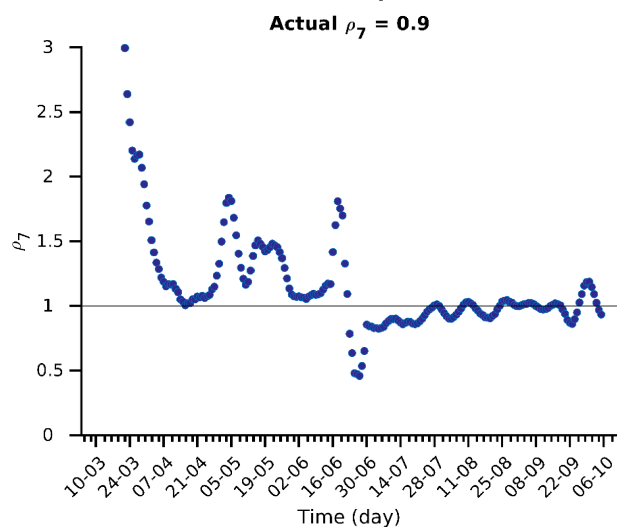
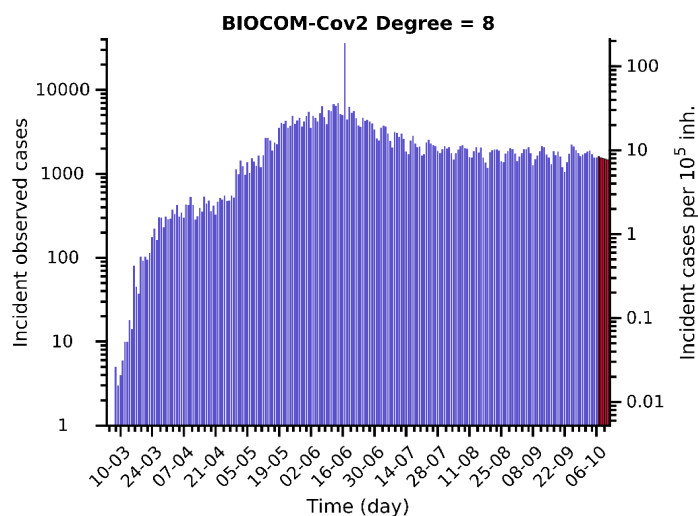
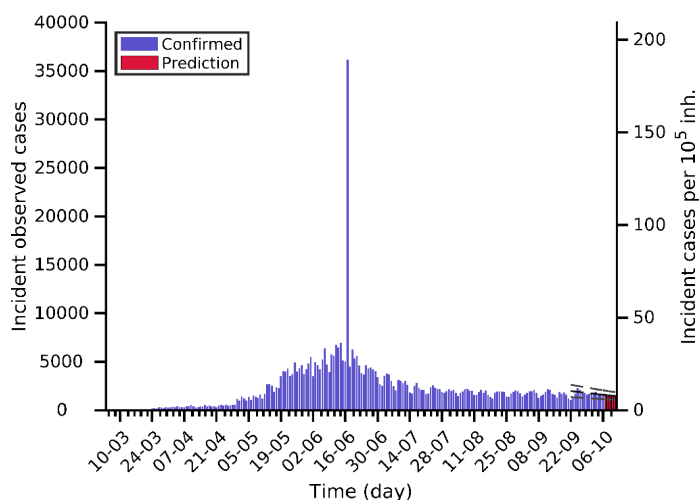


Predictions for next days

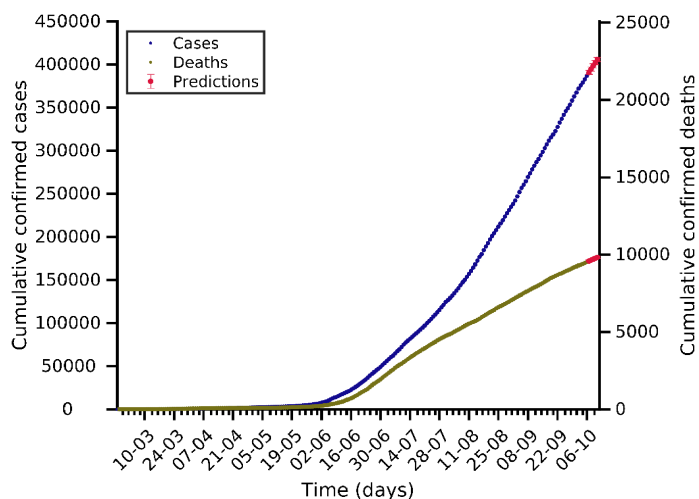
Day	Number of cases	95% Confidence Interval
07-10-2020	474909 (+1603)	[473702 - 476116]
09-10-2020	477969 (+1518)	[476720 - 479217]
11-10-2020	480930 (+1468)	[479597 - 482262]

Current indicators

A ₁₄	EPG	CFR
130	121	3.02 %



Iraq 06-10-2020. Pop: 40.2M. Cumulative incidence: 962/10⁵

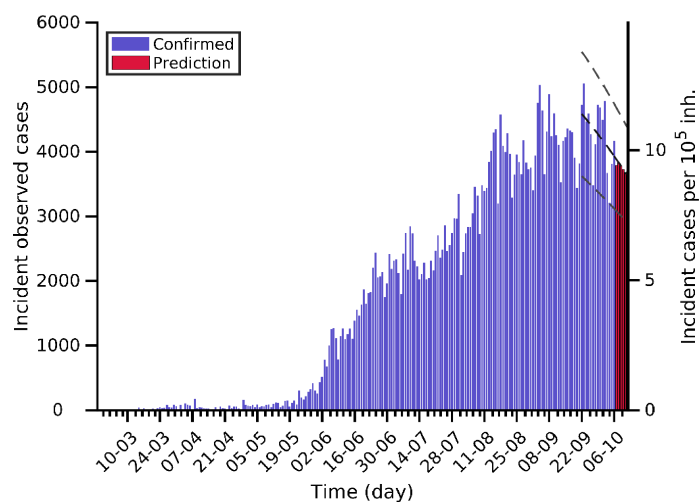


Predictions for next days

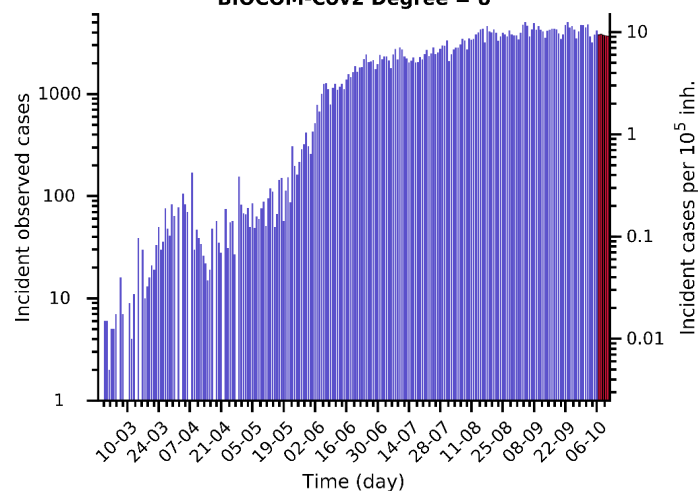
Day	Number of cases	95% Confidence Interval
07-10-2020	390911 (+3790)	[388592 - 393230]
09-10-2020	398523 (+3781)	[396120 - 400927]
11-10-2020	405932 (+3679)	[403354 - 408510]

Current indicators

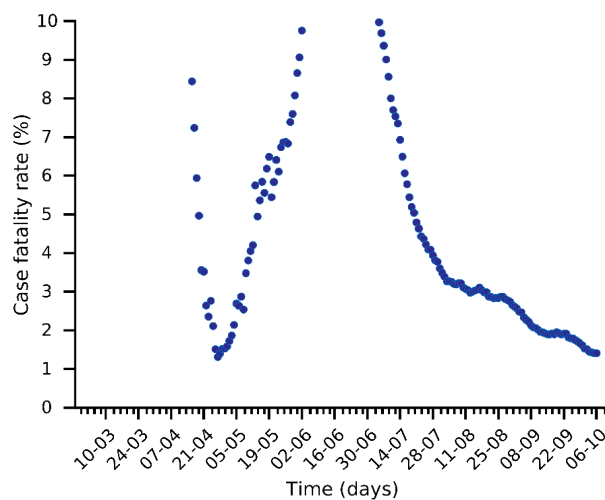
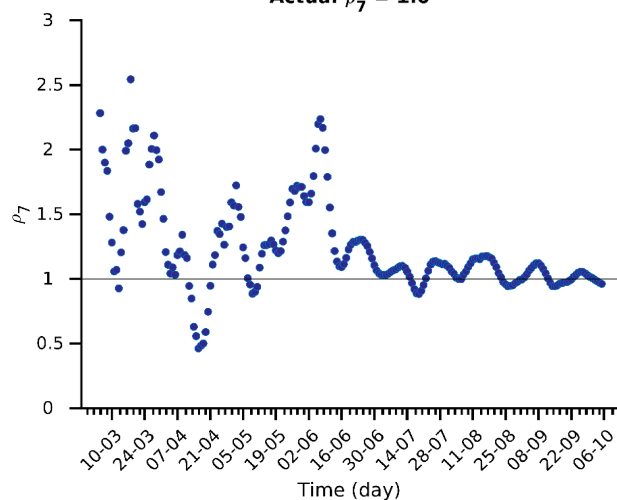
A ₁₄	EPG	CFR
148	142	1.41 %



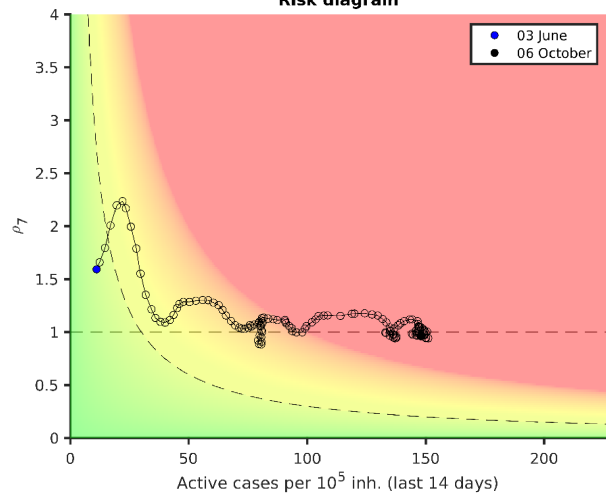
BIOCOM-Cov2 Degree = 8



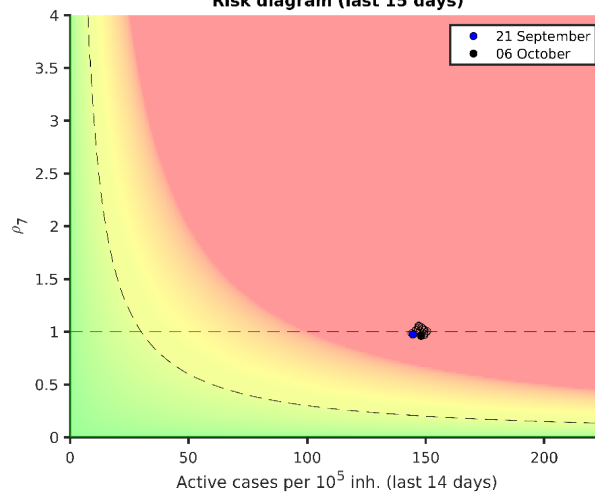
Actual $\rho_7 = 1.0$



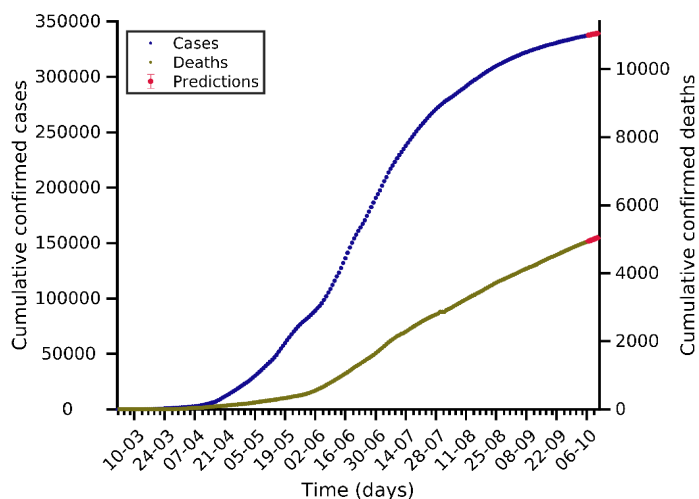
Risk diagram



Risk diagram (last 15 days)



Saudi Arabia 06-10-2020. Pop: 34.8M. Cumulative incidence: 969/10⁵

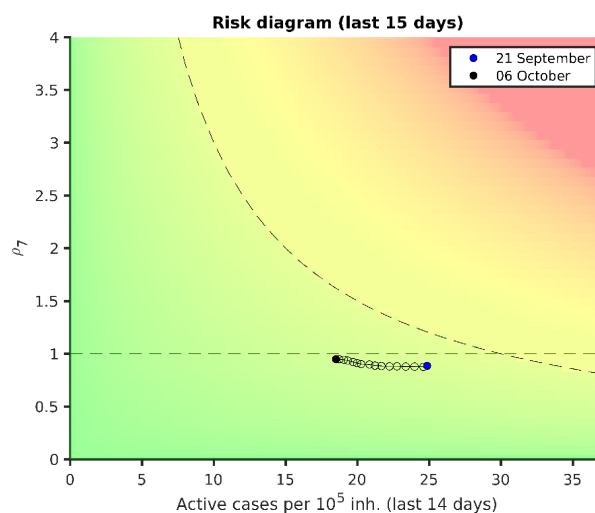
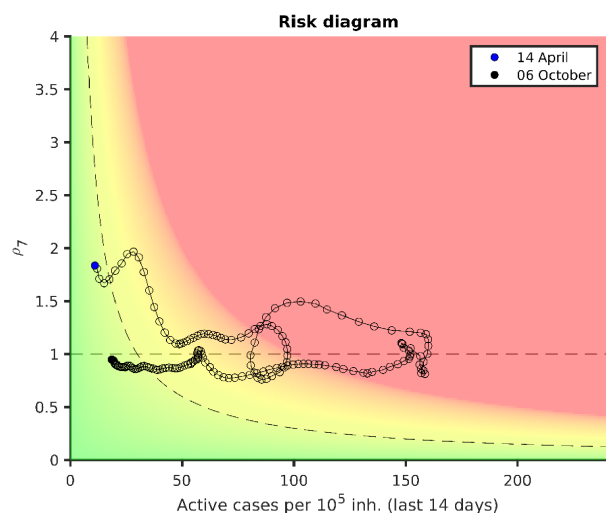
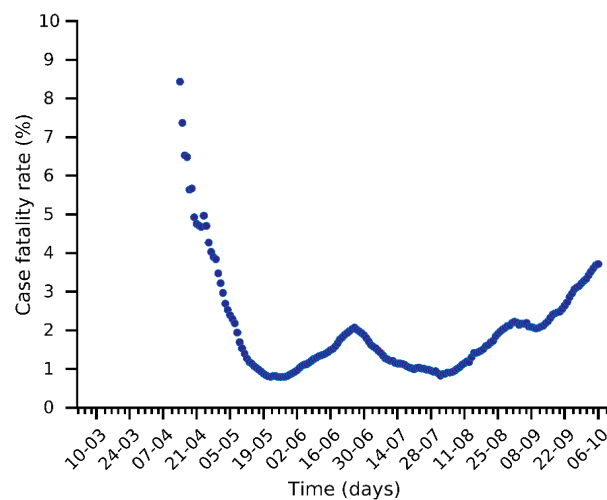
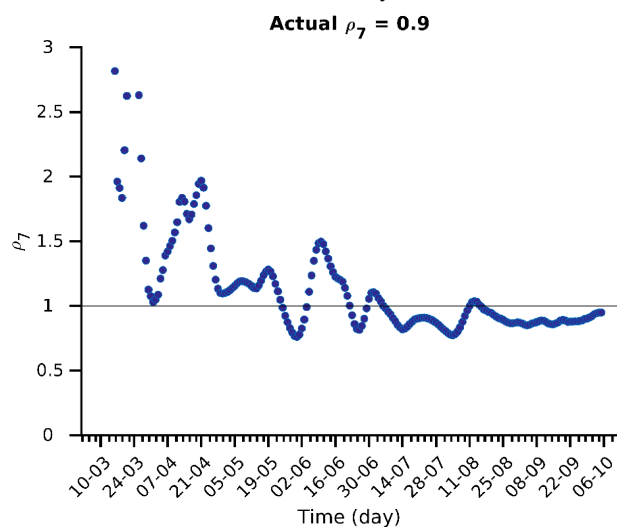
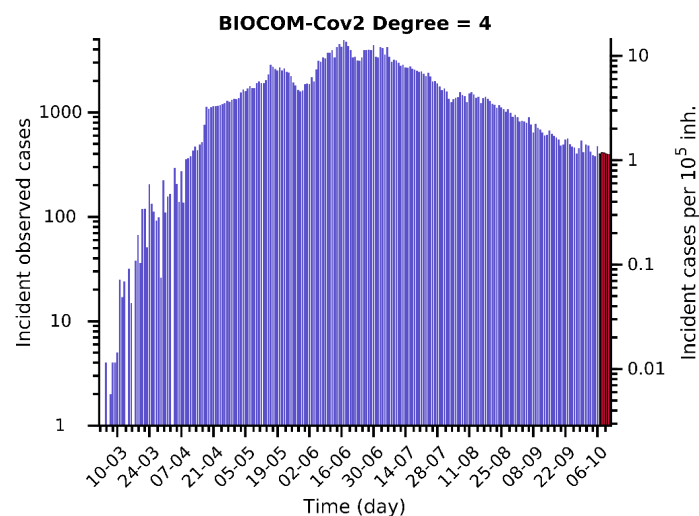
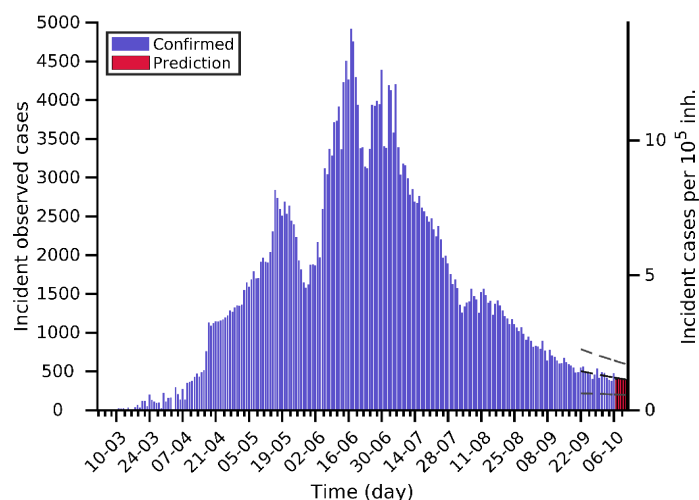


Predictions for next days

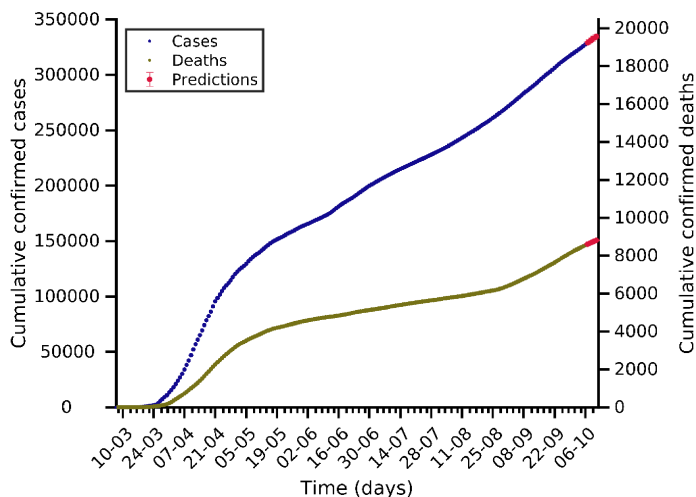
Day	Number of cases	95% Confidence Interval
07-10-2020	337641 (+398)	[337256 - 338027]
09-10-2020	338461 (+407)	[338061 - 338860]
11-10-2020	339260 (+397)	[338833 - 339687]

Current indicators

A ₁₄	EPG	CFR
19	18	3.71 %



Turkey 06-10-2020. Pop: 84.3M. Cumulative incidence: 388/10⁵

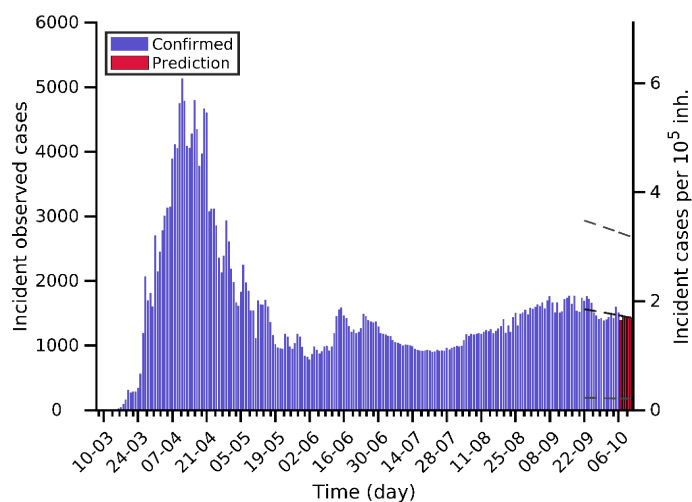


Predictions for next days

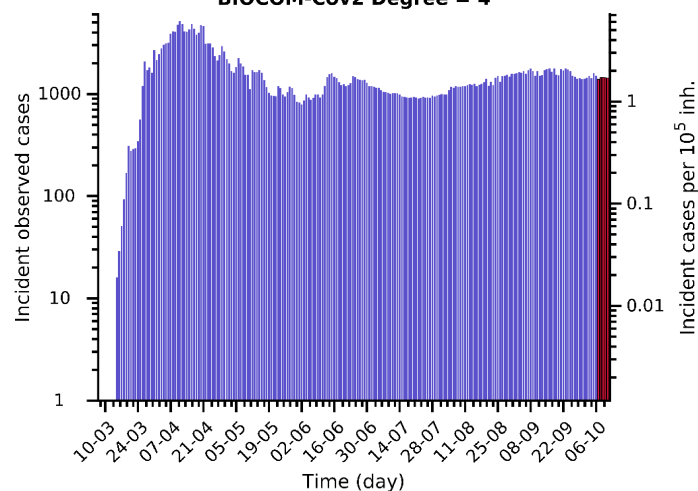
Day	Number of cases	95% Confidence Interval
07-10-2020	328951 (+1394)	[327604 - 330298]
09-10-2020	331854 (+1448)	[330456 - 333251]
11-10-2020	334728 (+1434)	[333223 - 336233]

Current indicators

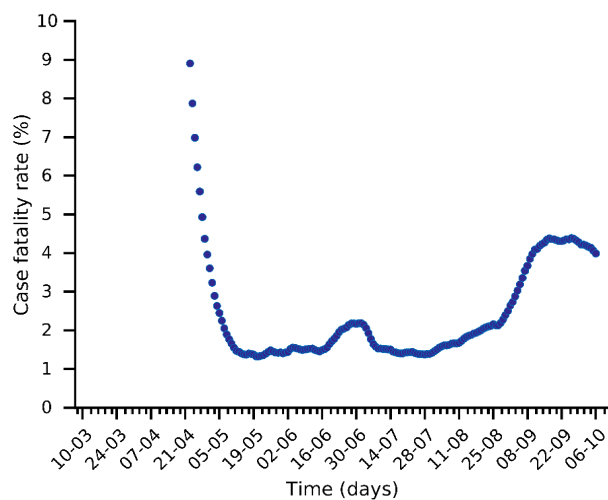
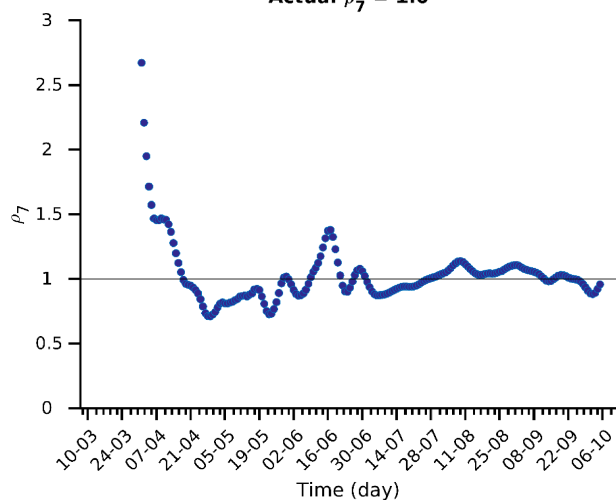
A ₁₄	EPG	CFR
25	24	3.99 %



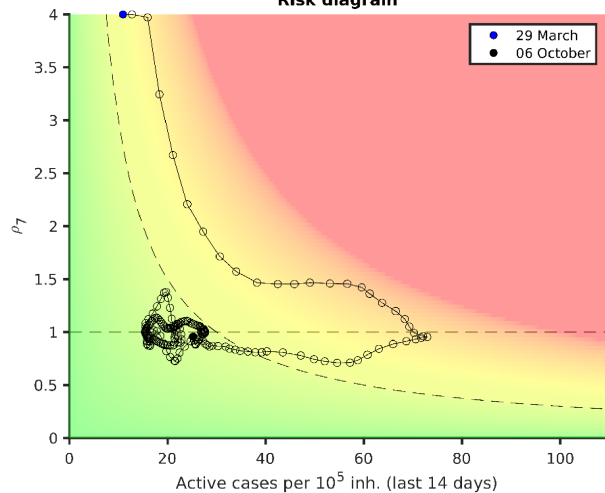
BIOCOM-Cov2 Degree = 4



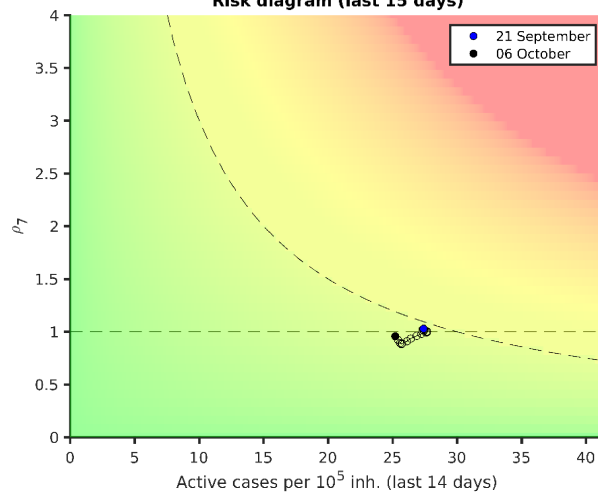
Actual $\rho_7 = 1.0$



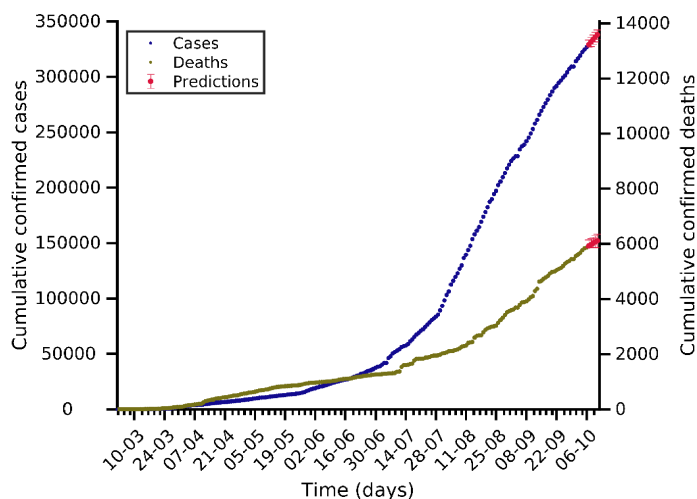
Risk diagram



Risk diagram (last 15 days)



Philippines 06-10-2020. Pop: 109.6M. Cumulative incidence: 298/10⁵

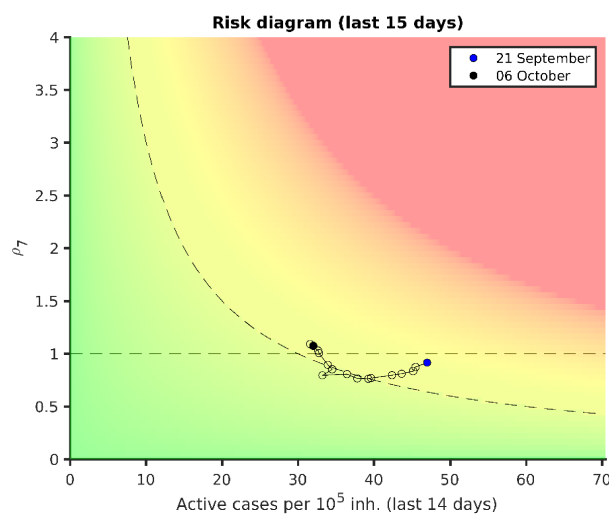
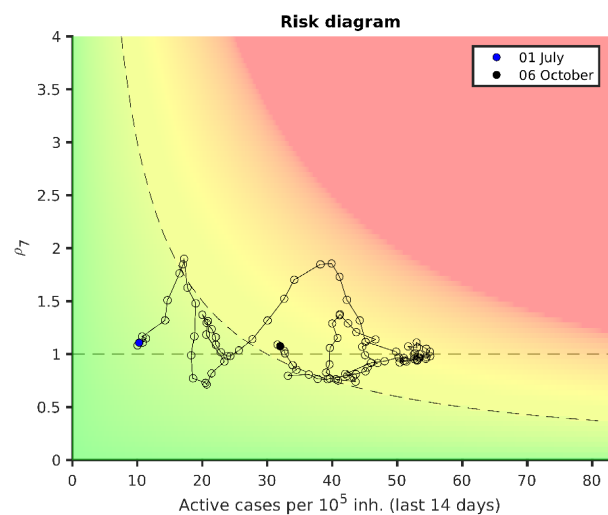
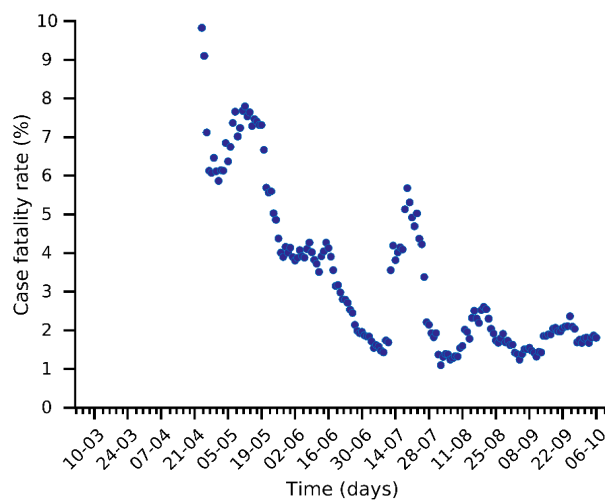
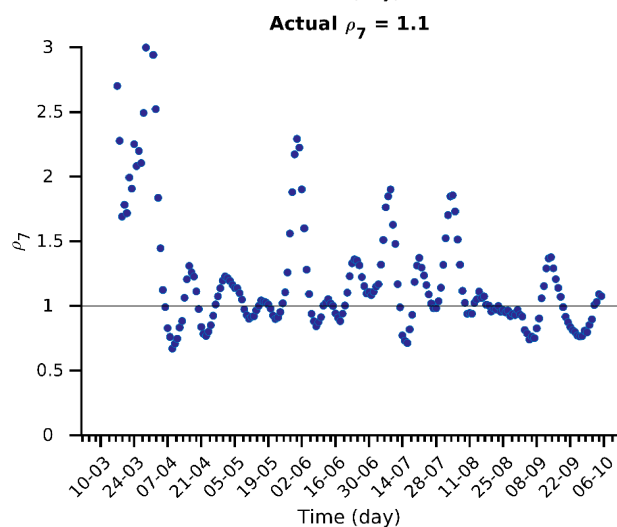
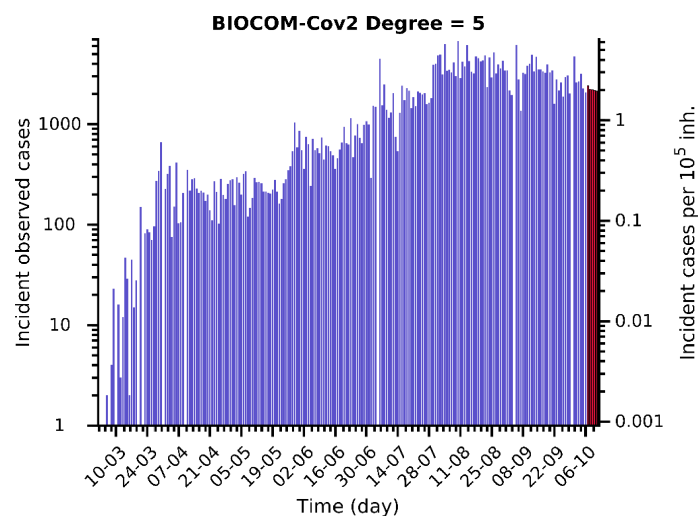
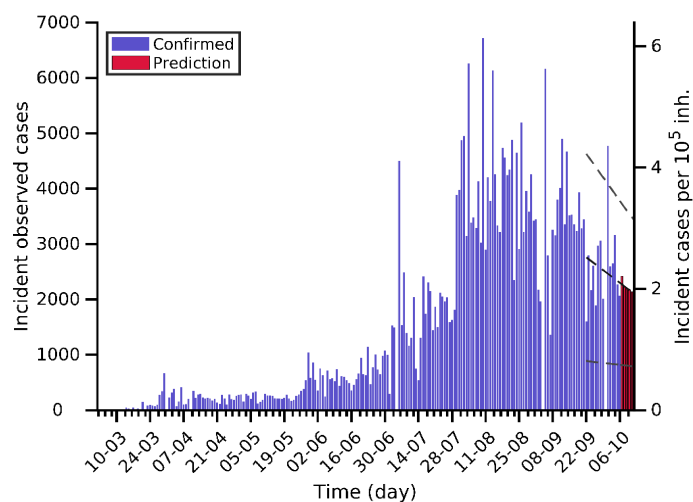


Predictions for next days

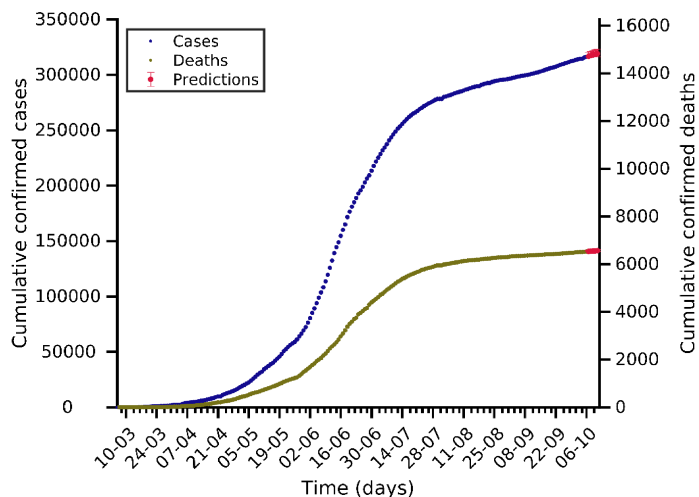
Day	Number of cases	95% Confidence Interval
07-10-2020	329251 (+2418)	[326833 - 333270]
09-10-2020	333690 (+2204)	[329528 - 337852]
11-10-2020	338001 (+2140)	[333546 - 342456]

Current indicators

A ₁₄	EPG	CFR
32	34	1.81 %



Pakistan 06-10-2020. Pop: 220.9M. Cumulative incidence: 143/10⁵

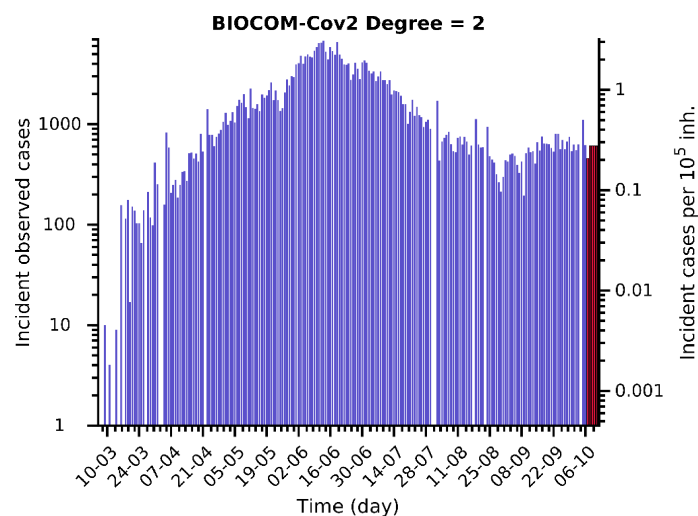
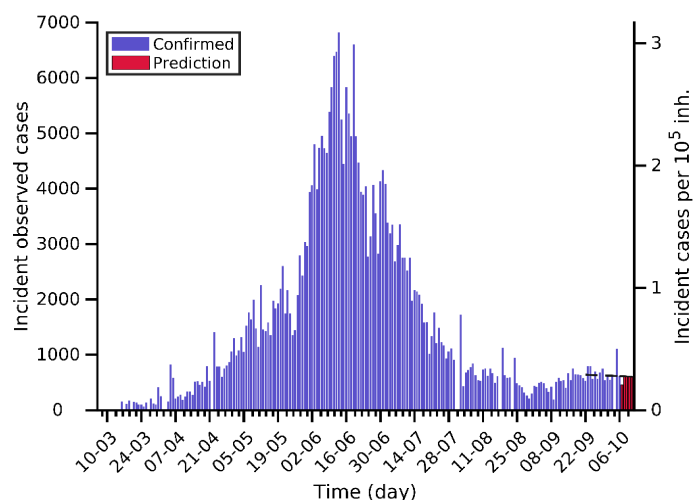


Predictions for next days

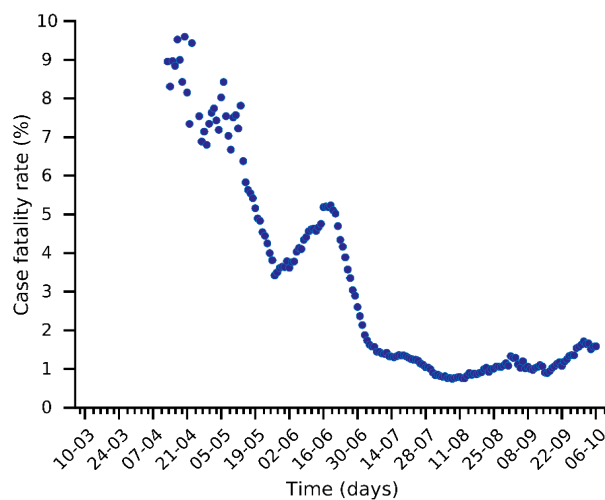
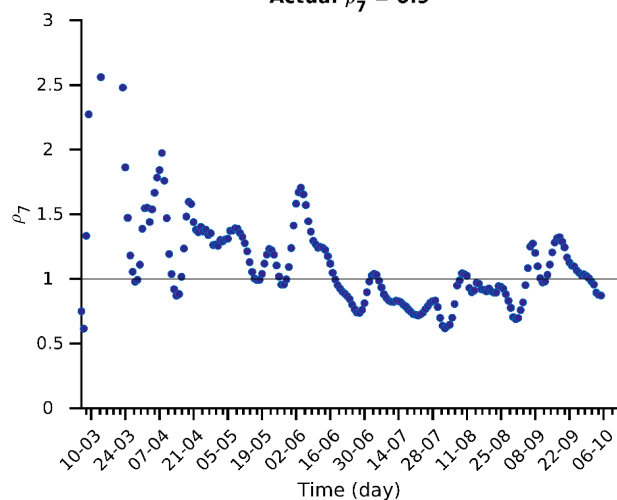
Day	Number of cases	95% Confidence Interval
07-10-2020	316809 (+458)	[316351 - 320348]
09-10-2020	318032 (+611)	[316351 - 321705]
11-10-2020	319248 (+607)	[316351 - 323205]

Current indicators

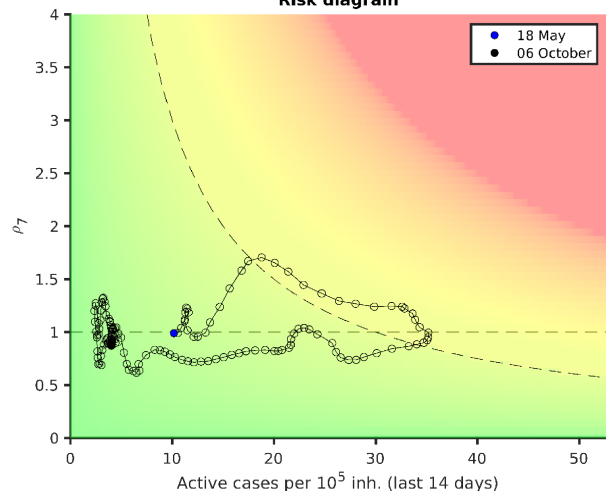
A ₁₄	EPG	CFR
4	4	1.58 %



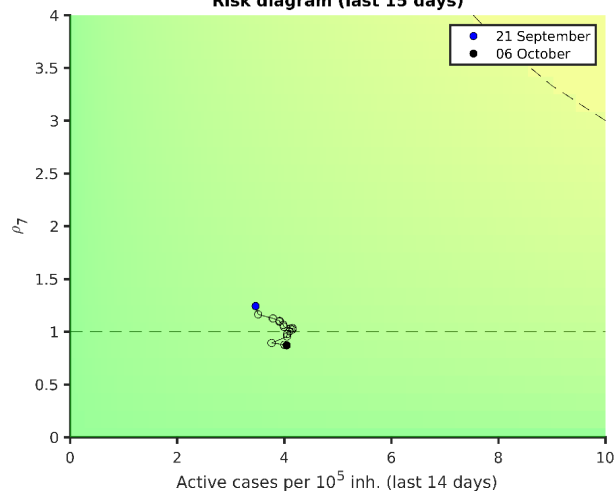
Actual $\rho_7 = 0.9$



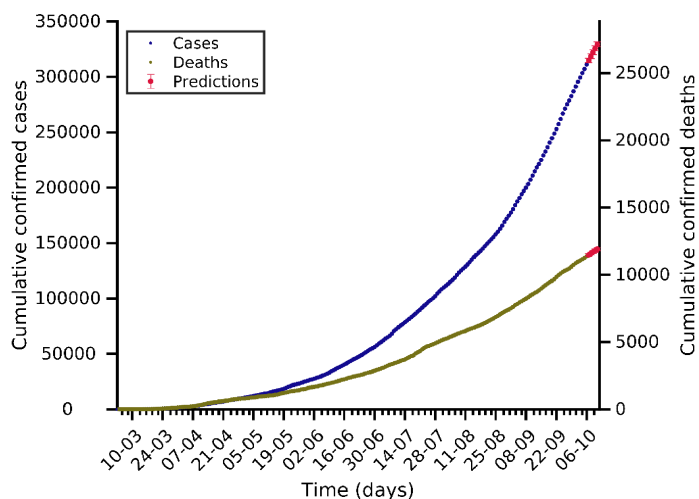
Risk diagram



Risk diagram (last 15 days)



Indonesia 06-10-2020. Pop: 273.5M. Cumulative incidence: 114/10⁵

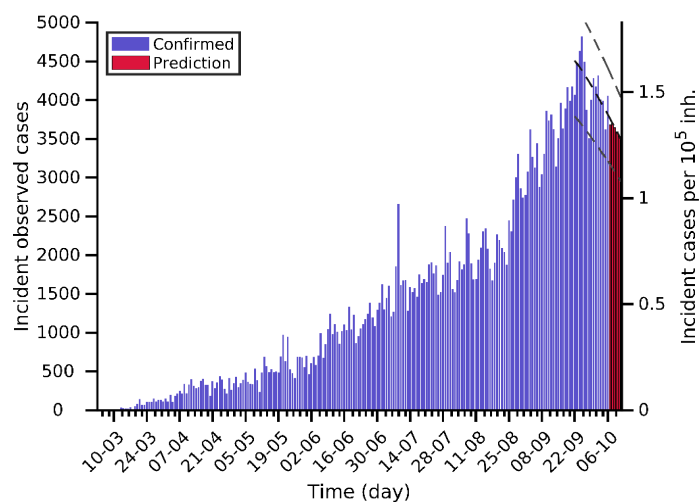


Predictions for next days

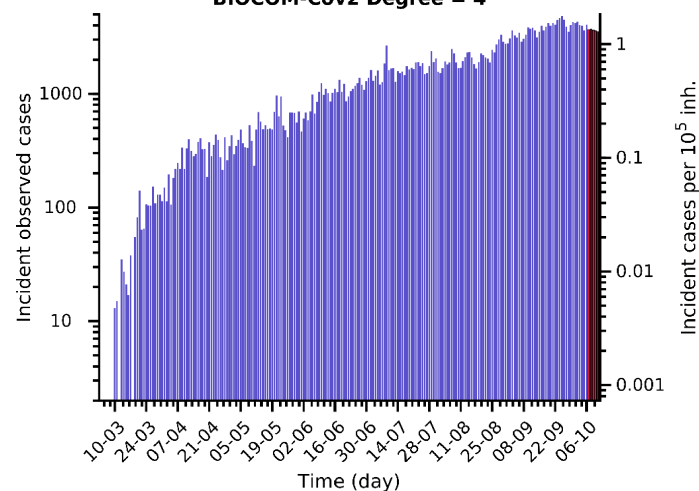
Day	Number of cases	95% Confidence Interval
07-10-2020	314855 (+3679)	[312807 - 316903]
09-10-2020	322202 (+3645)	[320080 - 324324]
11-10-2020	329322 (+3531)	[327048 - 331597]

Current indicators

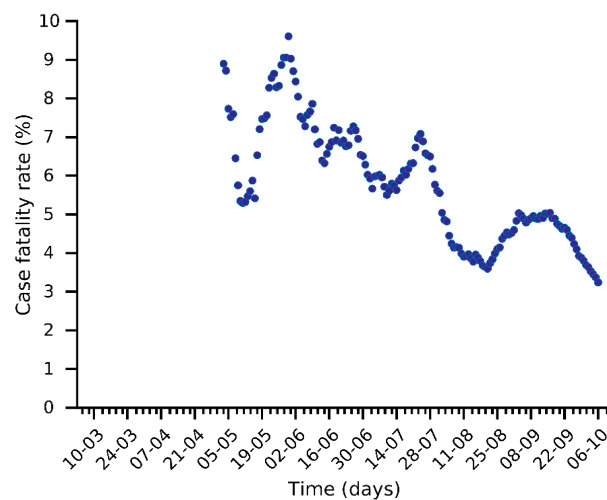
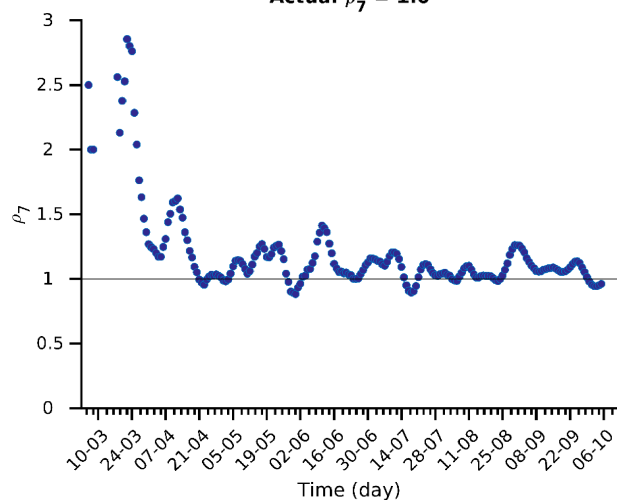
A ₁₄	EPG	CFR
21	20	3.24 %



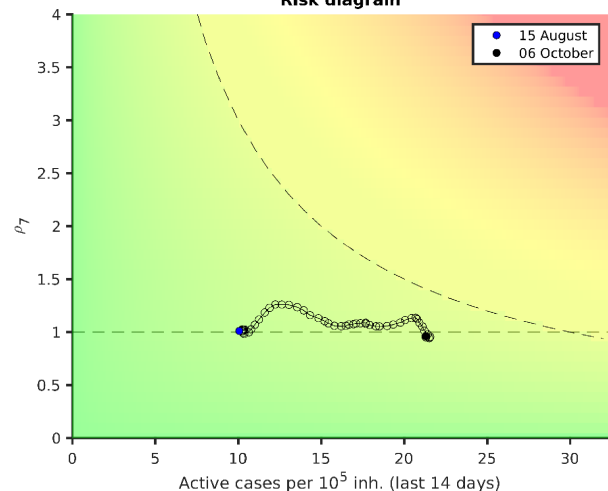
BIOCOM-Cov2 Degree = 4



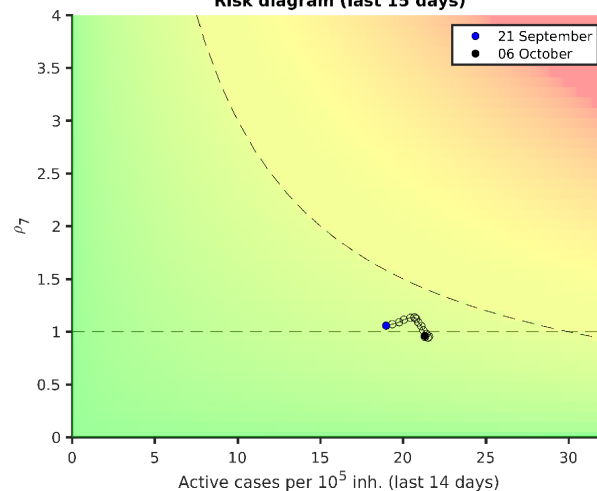
Actual $\rho_7 = 1.0$



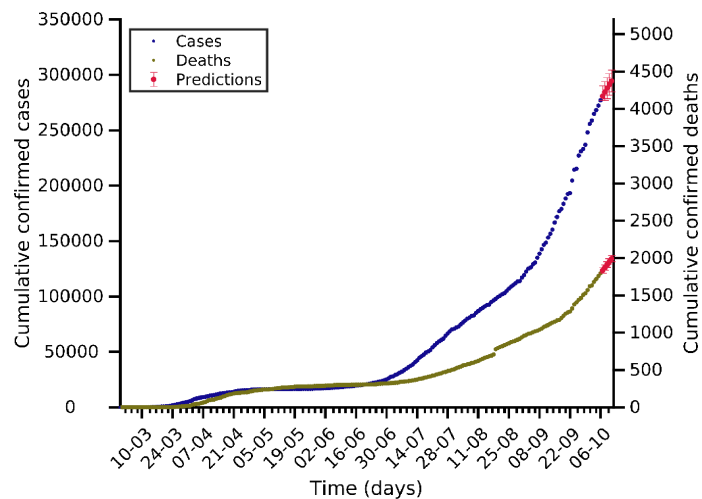
Risk diagram



Risk diagram (last 15 days)



Israel 06-10-2020. Pop: 8.7M. Cumulative incidence: 3201/10⁵

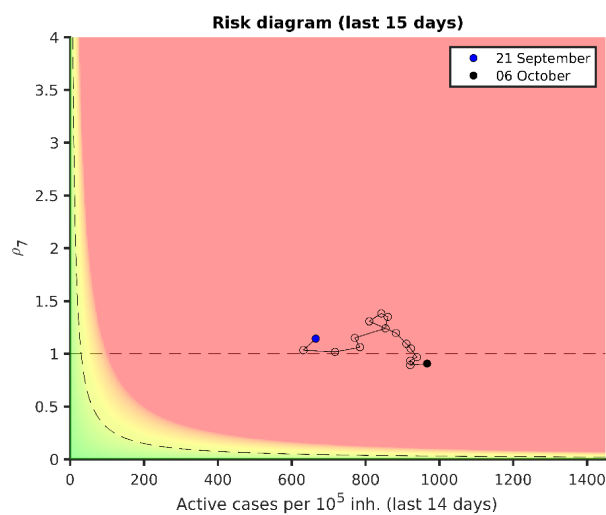
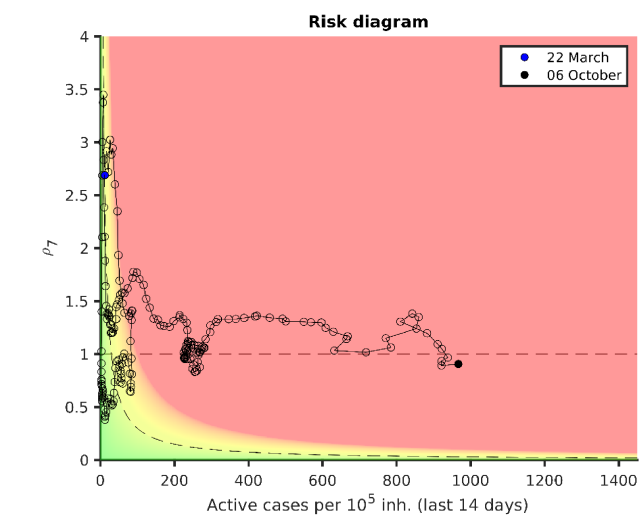
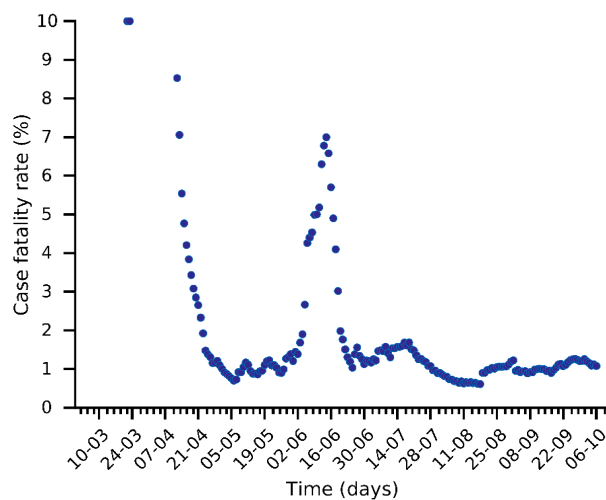
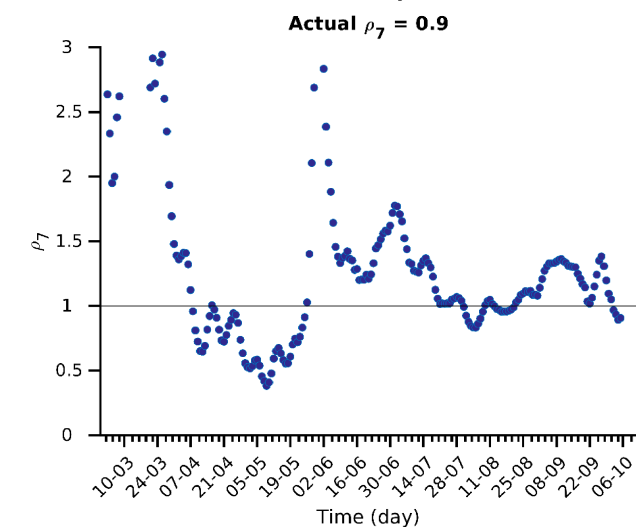
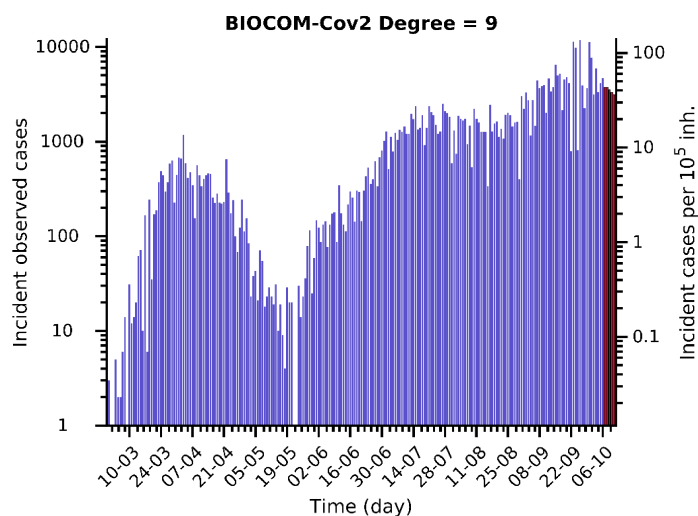
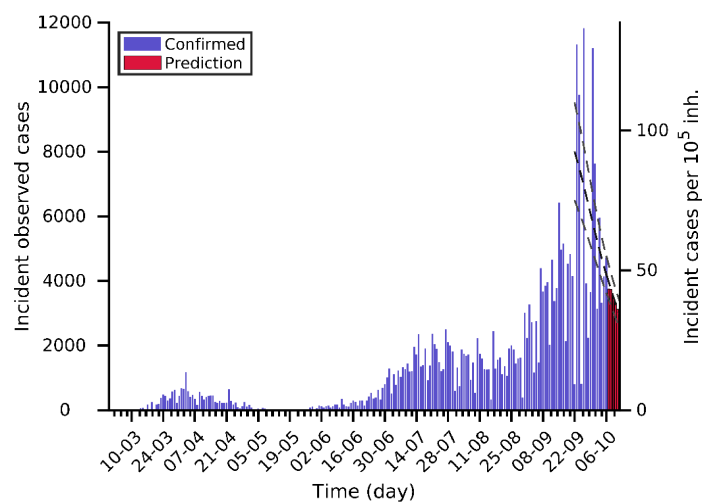


Predictions for next days

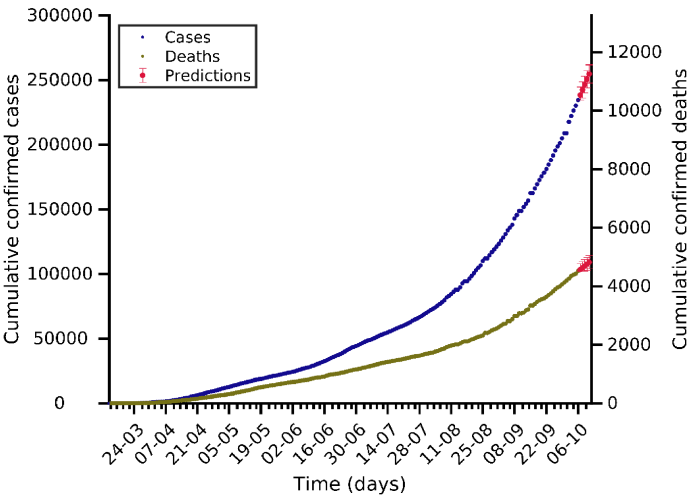
Day	Number of cases	95% Confidence Interval
07-10-2020	280776 (+3750)	[277026 - 290068]
09-10-2020	288046 (+3526)	[278507 - 297585]
11-10-2020	294484 (+3120)	[284504 - 304465]

Current indicators

A ₁₄	EPG	CFR
966	876	1.08 %

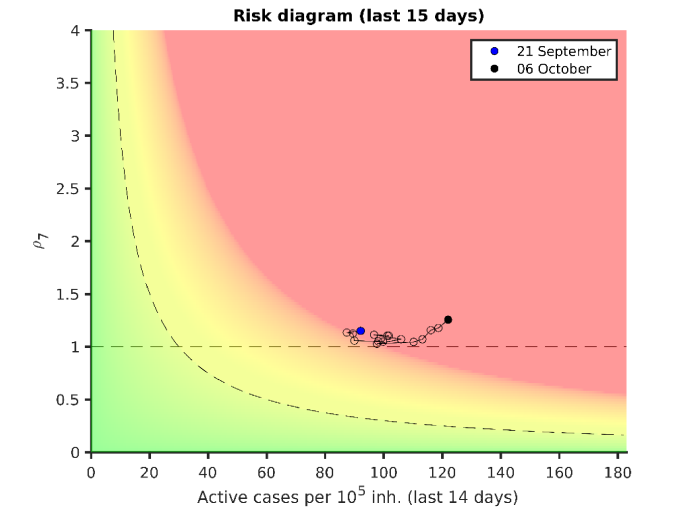
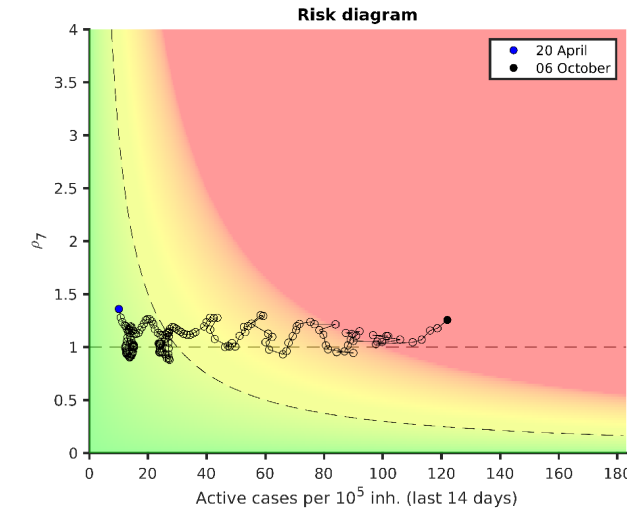
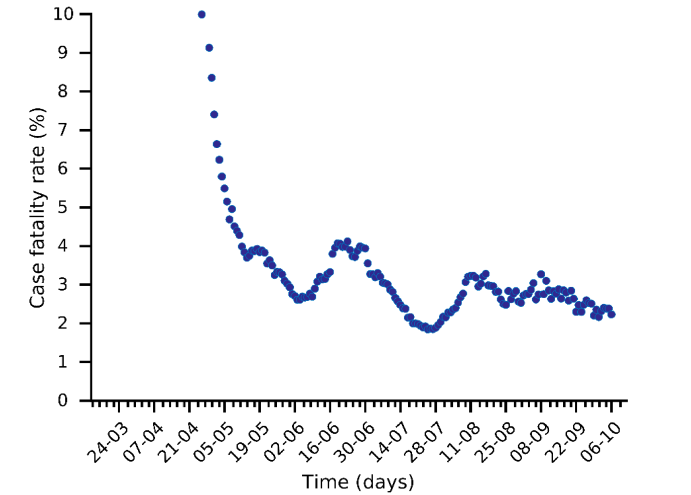
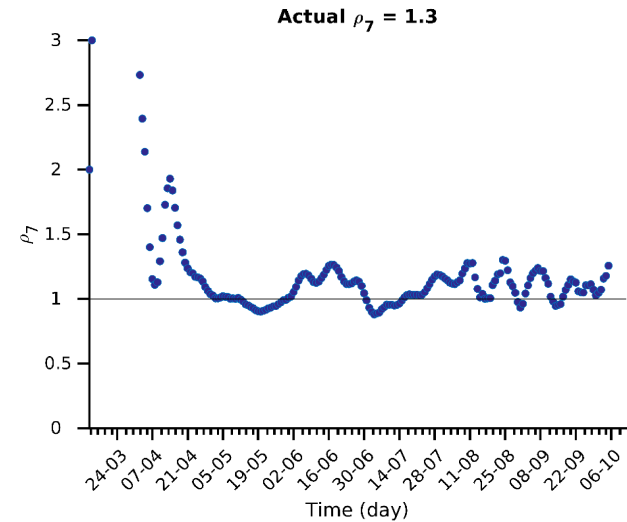
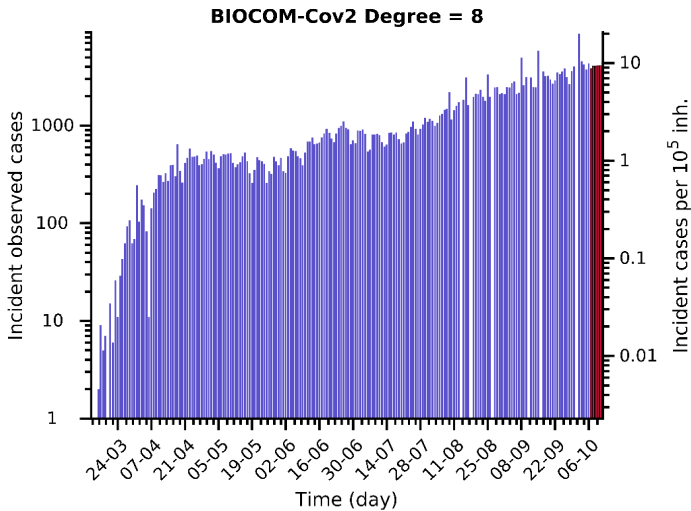
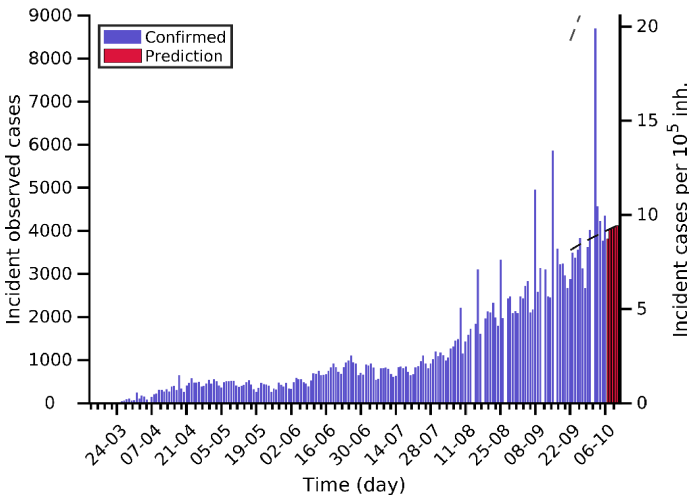


Ukraine 06-10-2020. Pop: 43.7M. Cumulative incidence: 536/10⁵

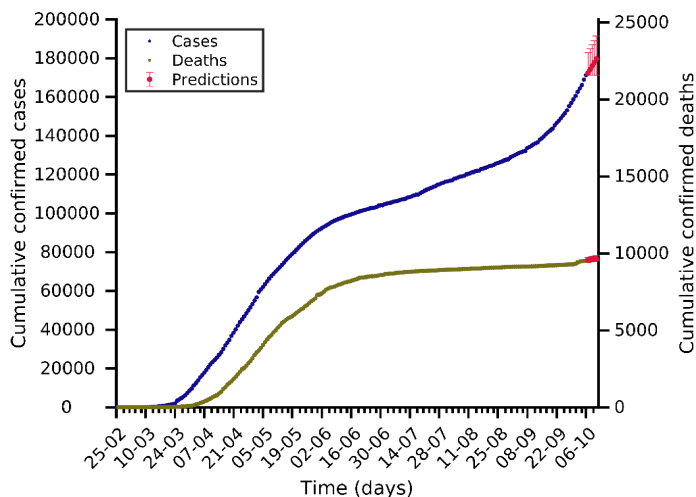


Predictions for next days		
Day	Number of cases	95% Confidence Interval
07-10-2020	238405 (+3821)	[234584 - 244602]
09-10-2020	246524 (+4073)	[240058 - 252990]
11-10-2020	254749 (+4125)	[247687 - 261810]

Current indicators		
A ₁₄	EPG	CFR
122	153	2.23 %



Canada 06-10-2020. Pop: 37.7M. Cumulative incidence: 454/10⁵

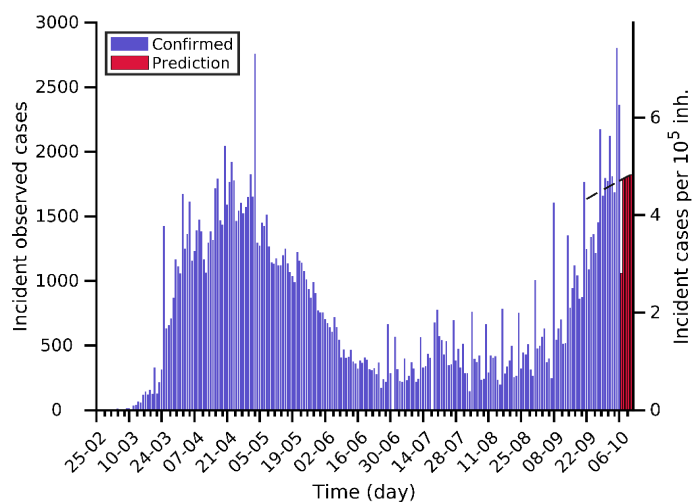


Predictions for next days

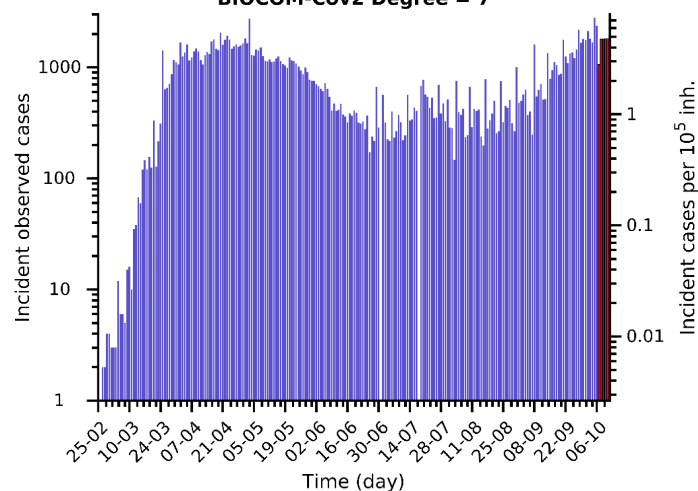
Day	Number of cases	95% Confidence Interval
07-10-2020	172384 (+1061)	[171323 - 182859]
09-10-2020	175980 (+1803)	[171323 - 186894]
11-10-2020	179615 (+1822)	[171323 - 191488]

Current indicators

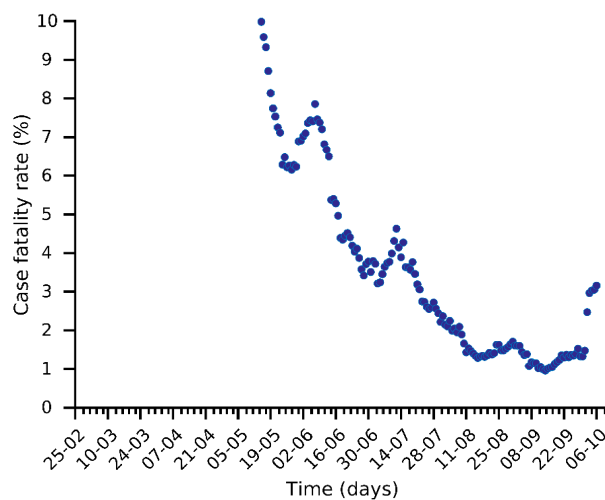
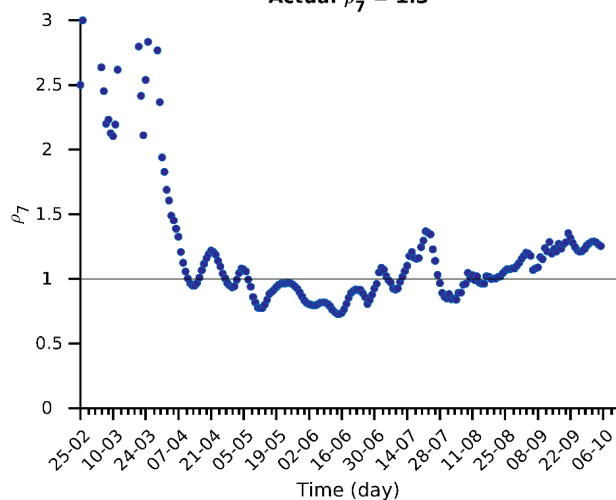
A ₁₄	EPG	CFR
65	82	3.16 %



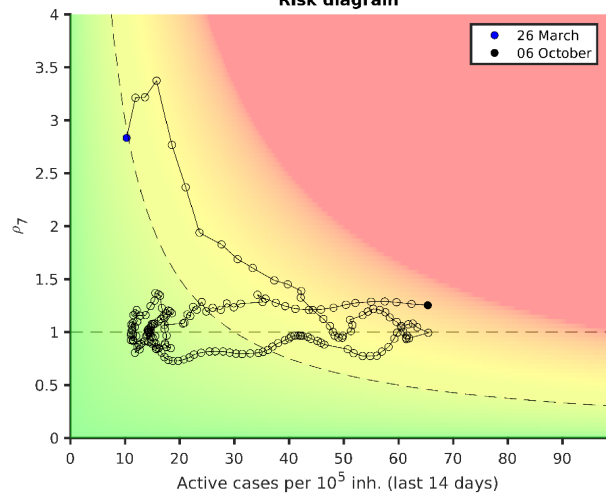
BIOCOM-Cov2 Degree = 7



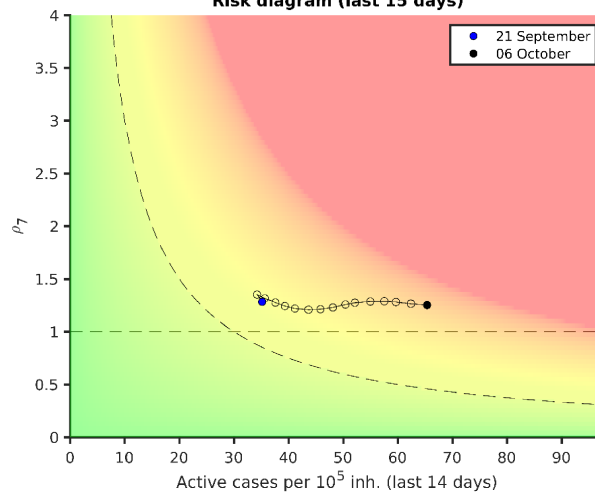
Actual $\rho_7 = 1.3$



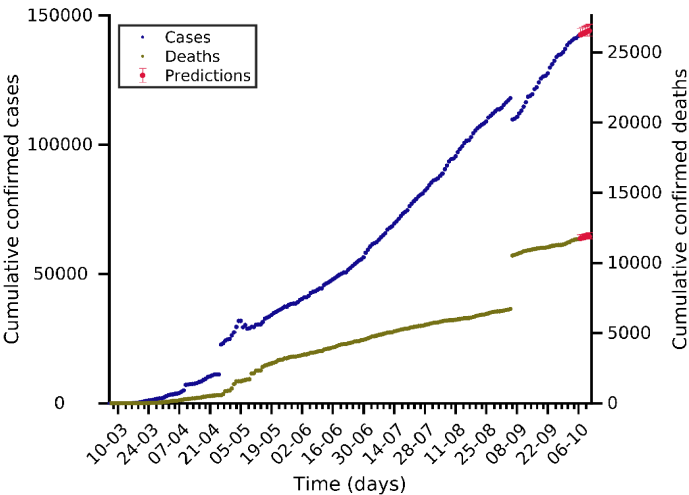
Risk diagram



Risk diagram (last 15 days)

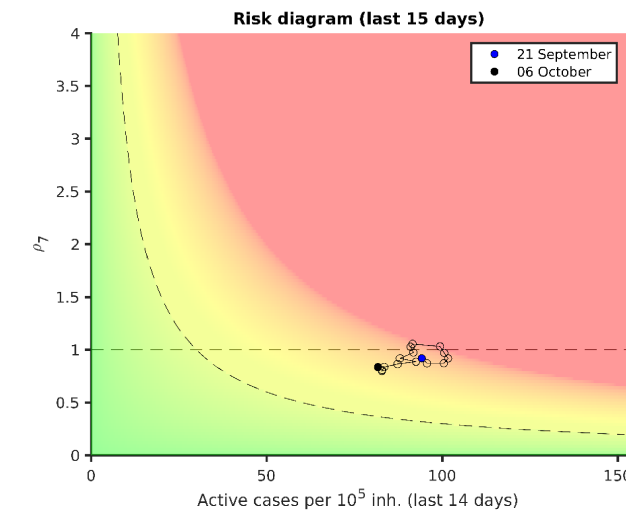
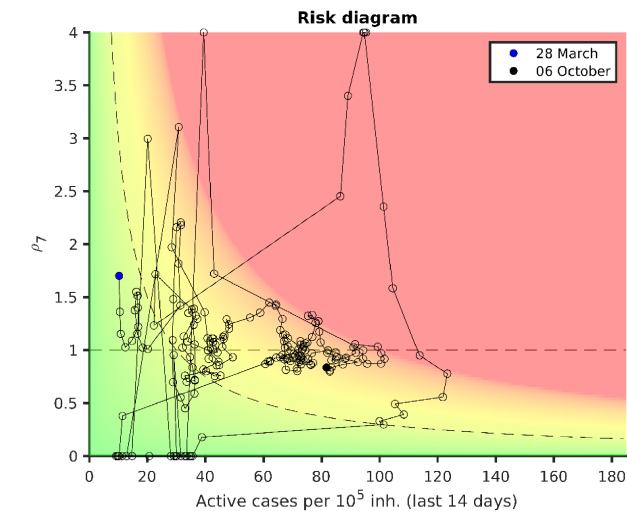
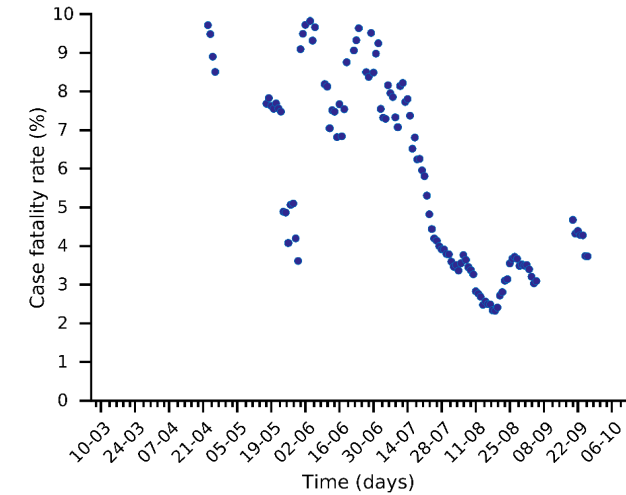
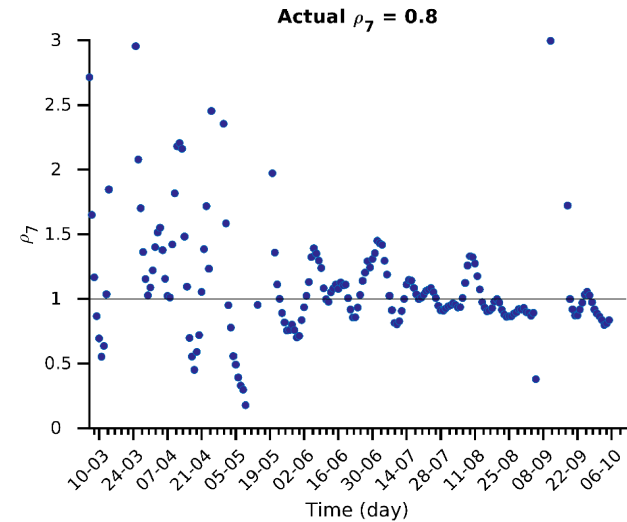
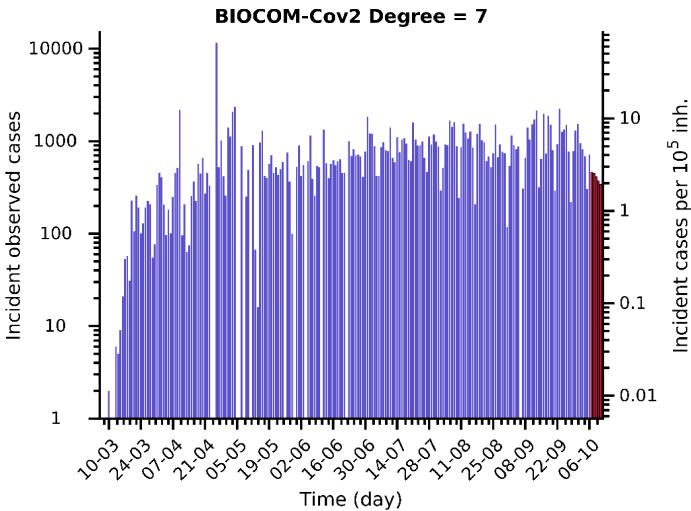
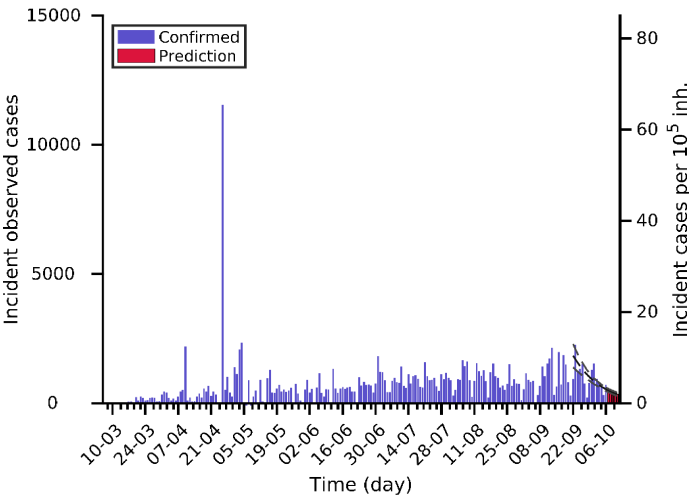


Ecuador 06-10-2020. Pop: 17.6M. Cumulative incidence: 805/10⁵

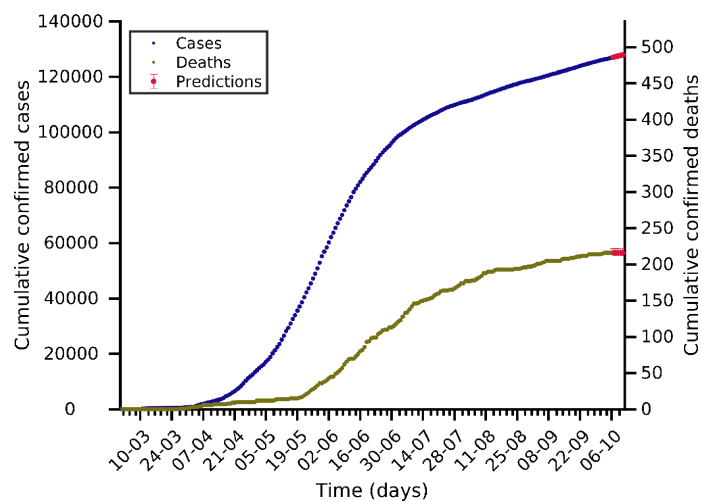


Predictions for next days		
Day	Number of cases	95% Confidence Interval
07-10-2020	142521 (+465)	[142056 - 144906]
09-10-2020	143382 (+411)	[142056 - 145811]
11-10-2020	144097 (+341)	[142056 - 146597]

Current indicators		
A ₁₄	EPG	CFR
82	68	10.00 %



Qatar 06-10-2020. Pop: 2.9M. Cumulative incidence: 4406/10⁵

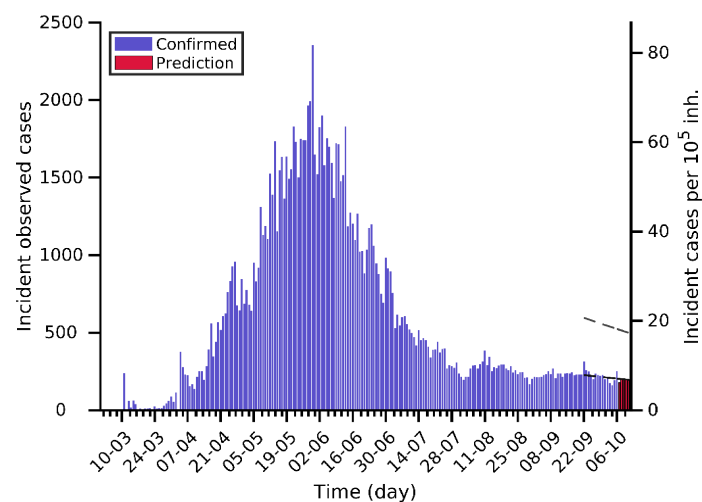


Predictions for next days

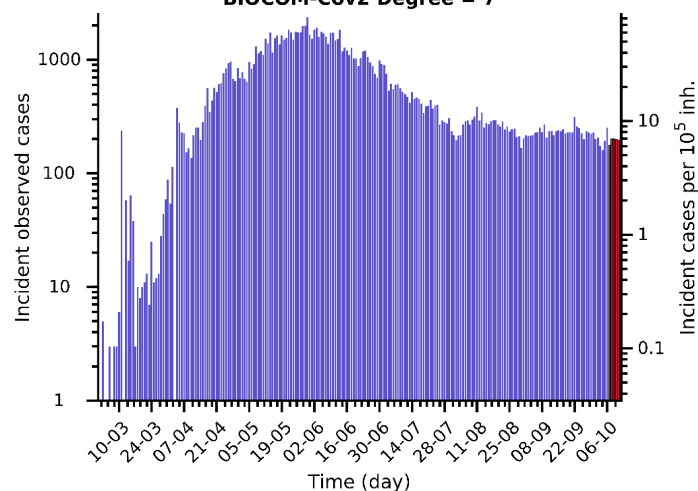
Day	Number of cases	95% Confidence Interval
07-10-2020	127120 (+177)	[126943 - 127464]
09-10-2020	127521 (+200)	[127164 - 127878]
11-10-2020	127916 (+197)	[127533 - 128299]

Current indicators

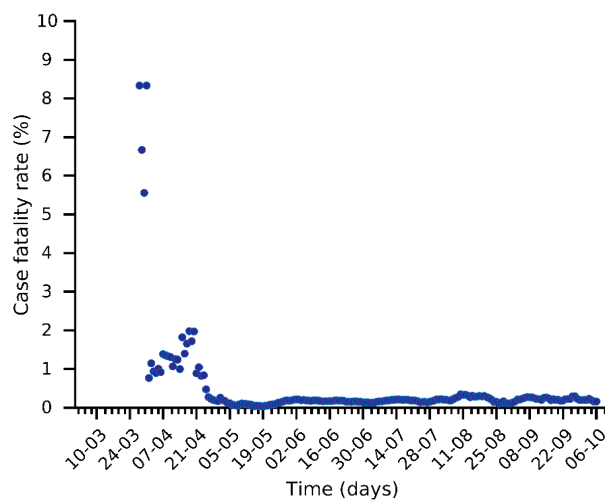
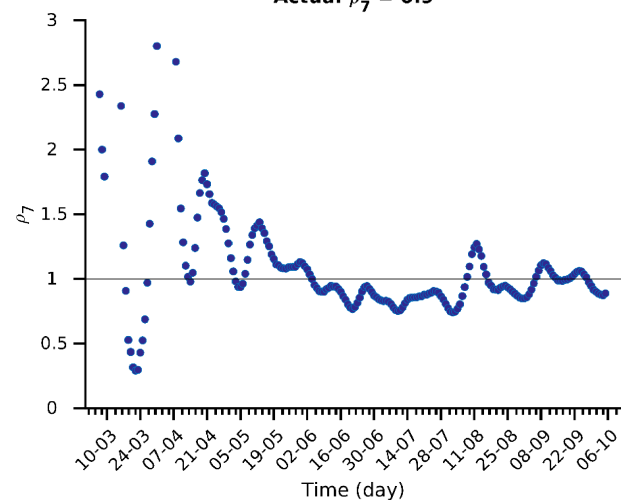
A ₁₄	EPG	CFR
105	93	0.16 %



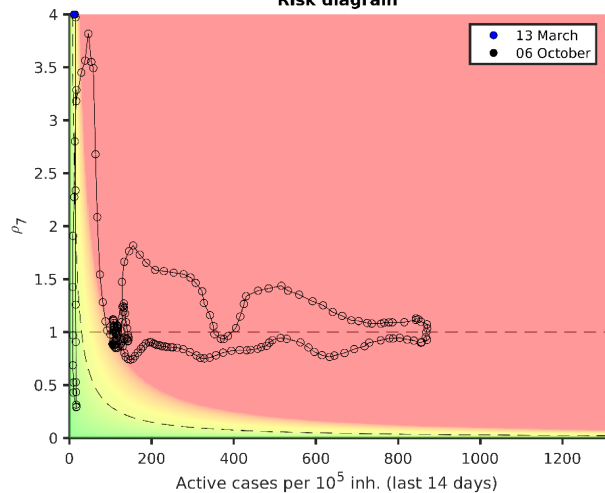
BIOCOM-Cov2 Degree = 7



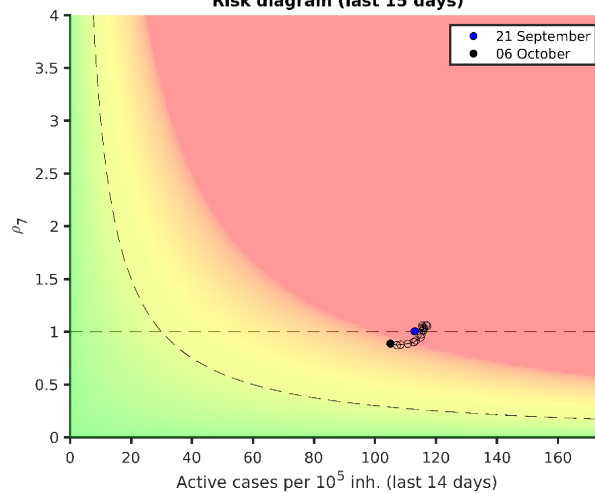
Actual $\rho_7 = 0.9$



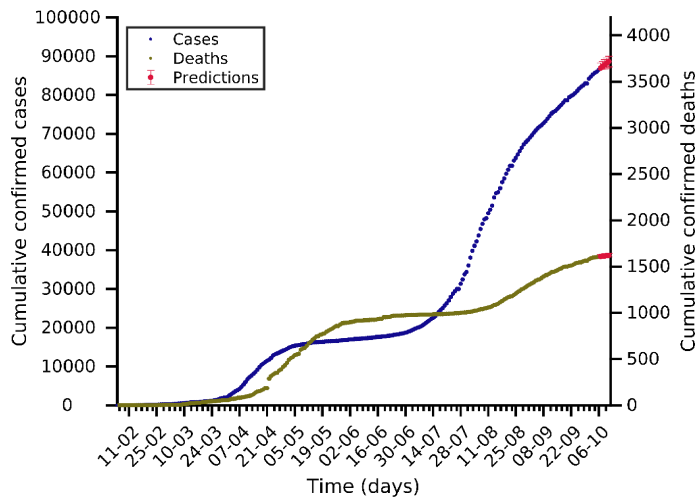
Risk diagram



Risk diagram (last 15 days)



Japan 06-10-2020. Pop: 126.5M. Cumulative incidence: 68/10⁵

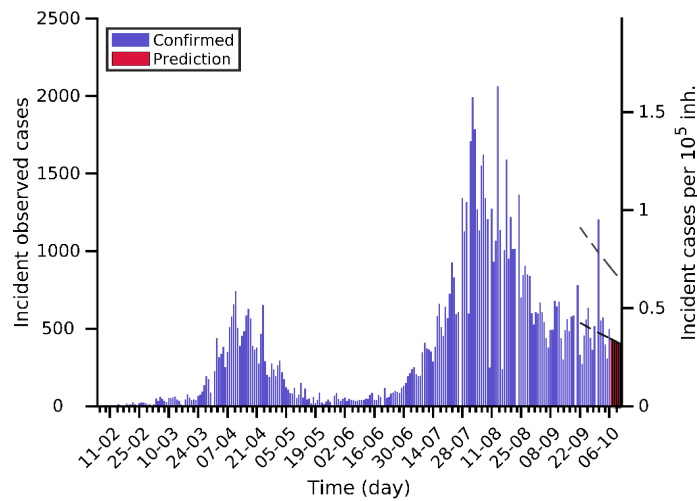


Predictions for next days

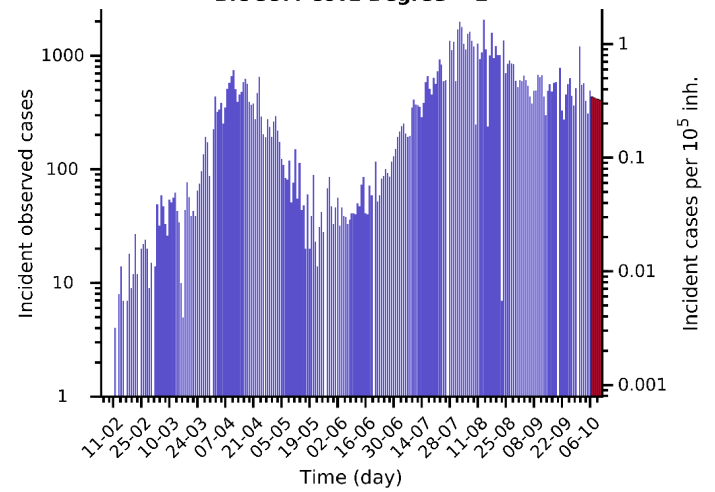
Day	Number of cases	95% Confidence Interval
07-10-2020	86977 (+434)	[86543 - 88222]
09-10-2020	87822 (+419)	[86543 - 89110]
11-10-2020	88640 (+406)	[87263 - 90017]

Current indicators

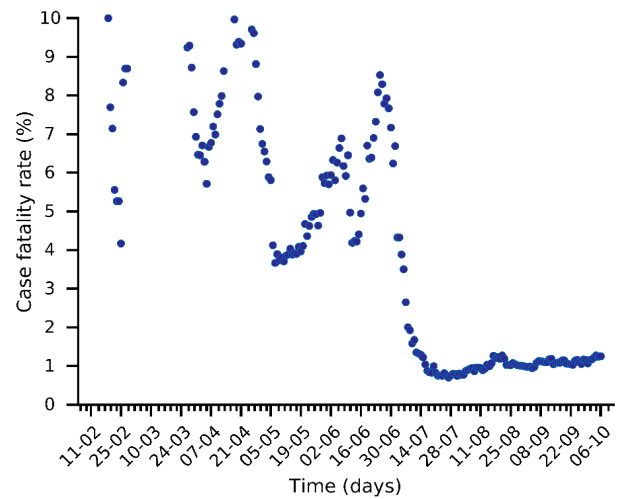
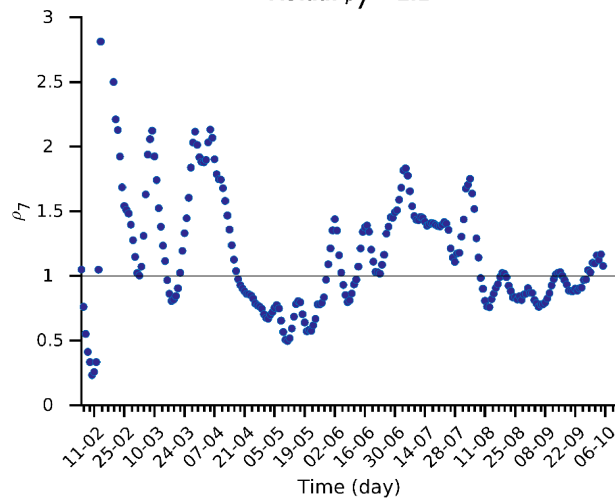
A ₁₄	EPG	CFR
5	6	1.25 %



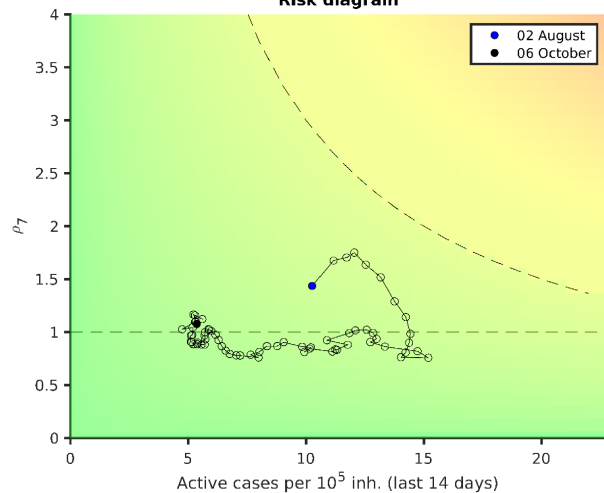
BIOCOM-Cov2 Degree = 2



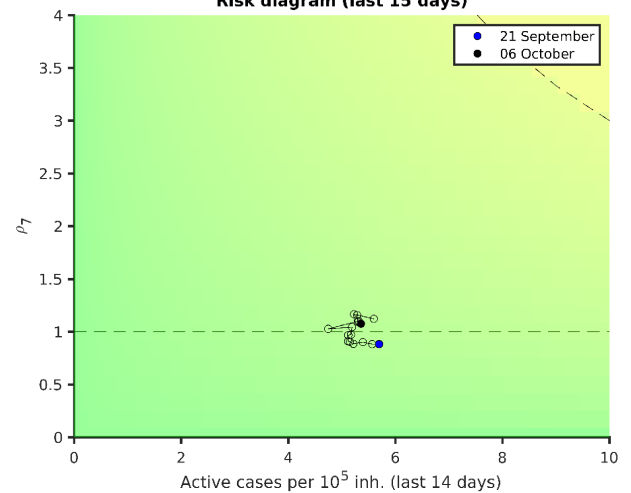
Actual $\rho_7 = 1.1$



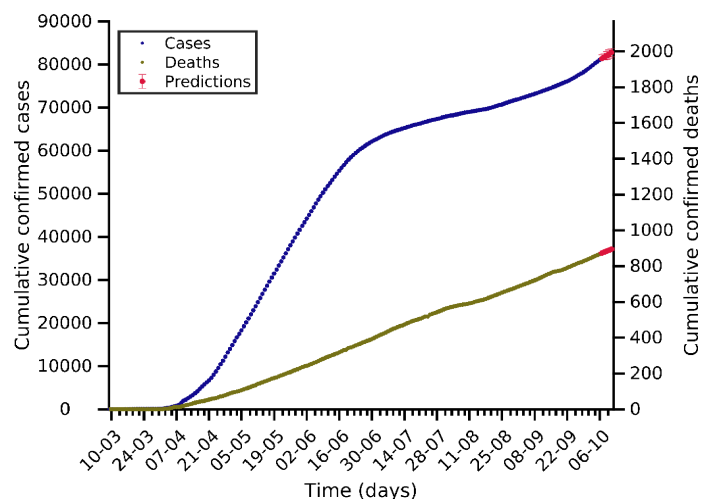
Risk diagram



Risk diagram (last 15 days)



Belarus 06-10-2020. Pop: 9.4M. Cumulative incidence: 858/10⁵

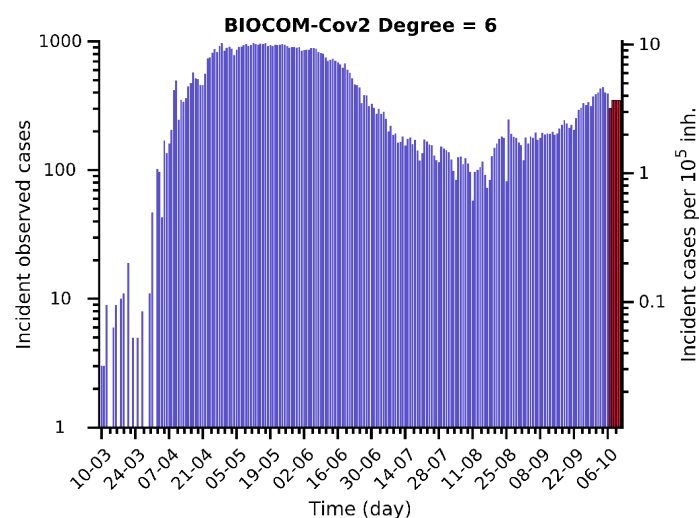
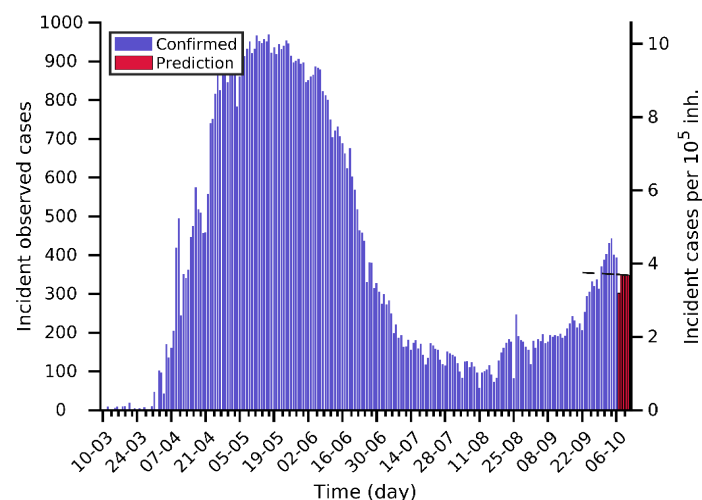


Predictions for next days

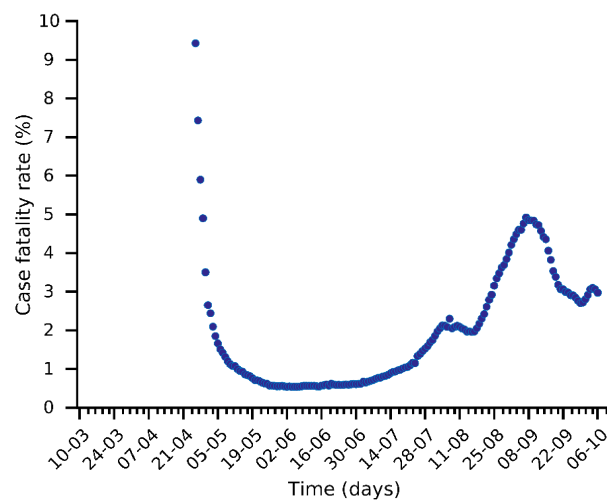
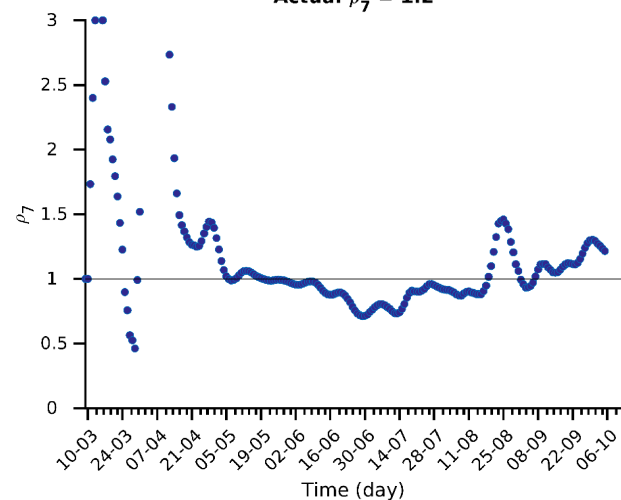
Day	Number of cases	95% Confidence Interval
07-10-2020	81392 (+302)	[81090 - 82262]
09-10-2020	82091 (+349)	[81187 - 82995]
11-10-2020	82788 (+348)	[81812 - 83764]

Current indicators

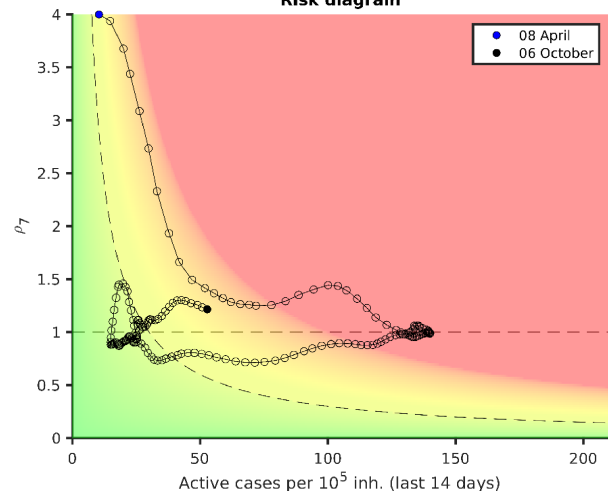
A ₁₄	EPG	CFR
53	64	2.97 %



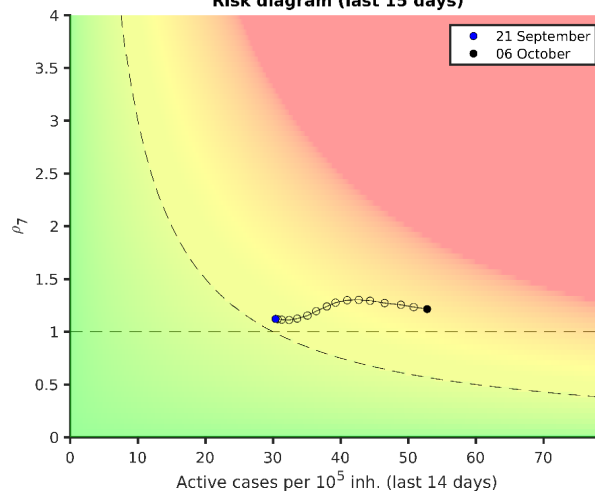
Actual $\rho_7 = 1.2$



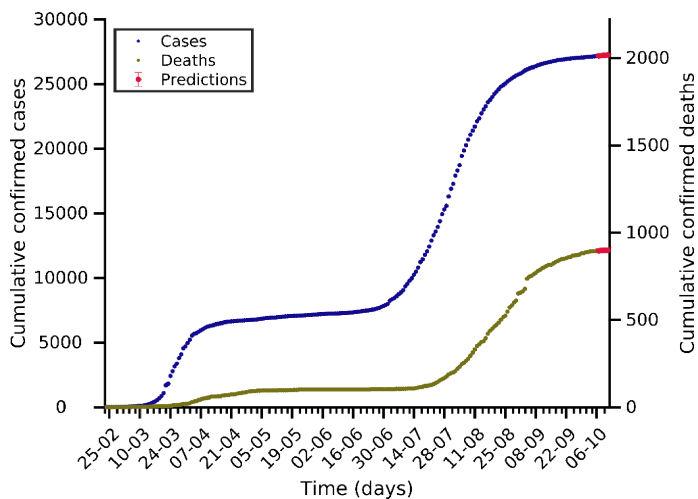
Risk diagram



Risk diagram (last 15 days)



Australia 06-10-2020. Pop: 25.5M. Cumulative incidence: 107/10⁵

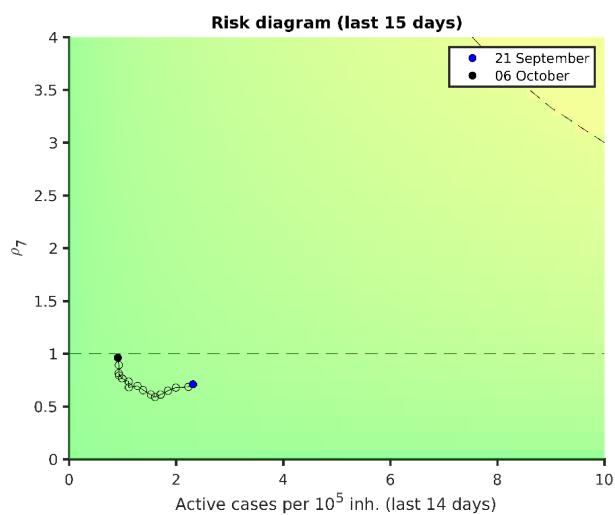
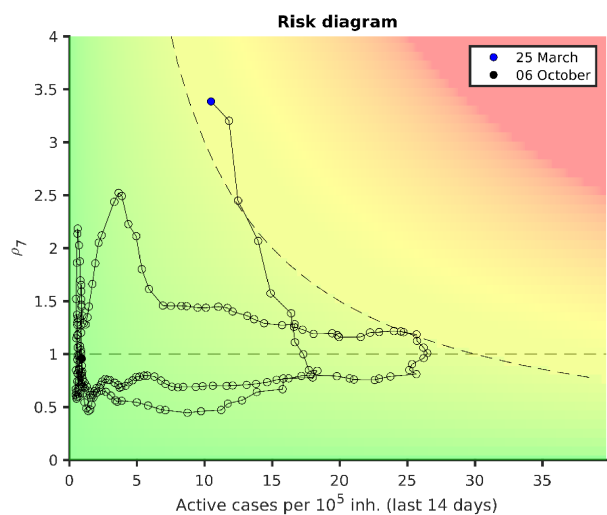
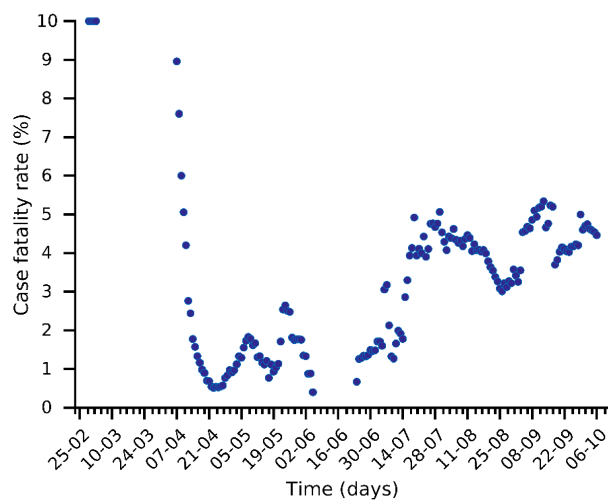
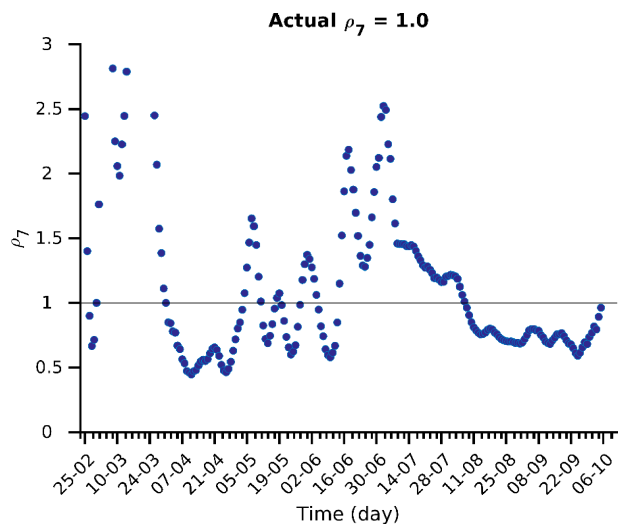
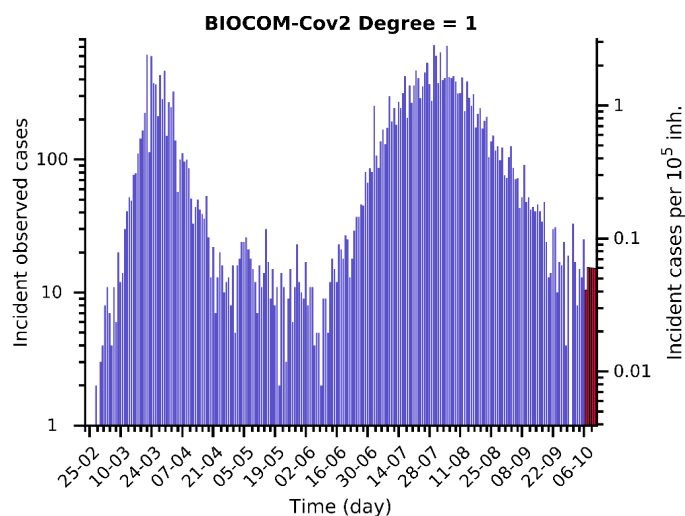
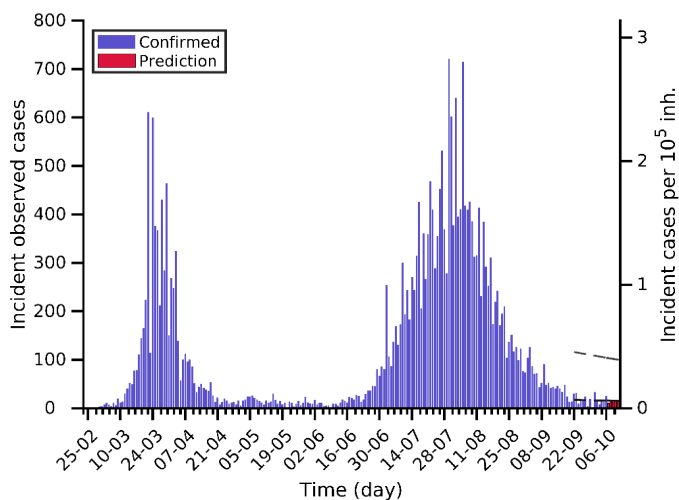


Predictions for next days

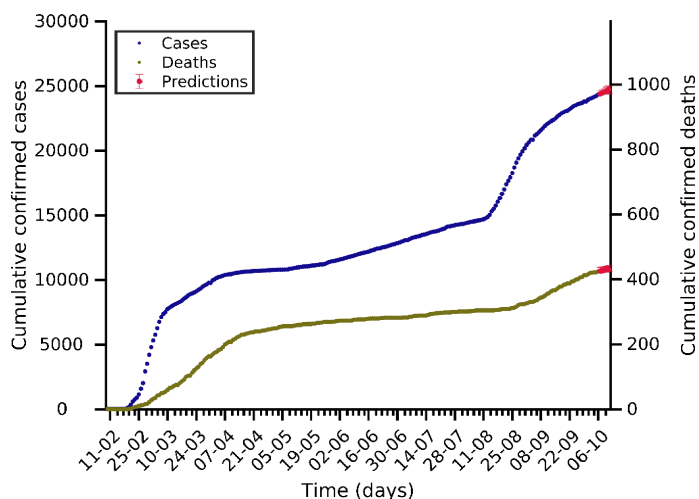
Day	Number of cases	95% Confidence Interval
07-10-2020	27184 (+10)	[27174 - 27247]
09-10-2020	27215 (+15)	[27174 - 27280]
11-10-2020	27246 (+15)	[27176 - 27316]

Current indicators

A ₁₄	EPG	CFR
1	1	4.46 %



South Korea 06-10-2020. Pop: 51.3M. Cumulative incidence: 48/10⁵

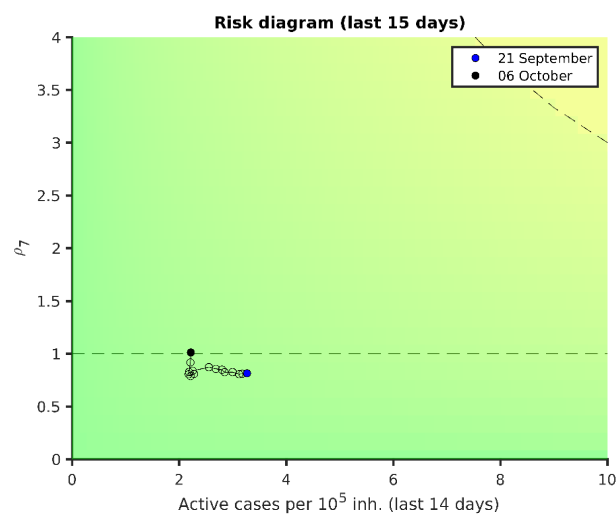
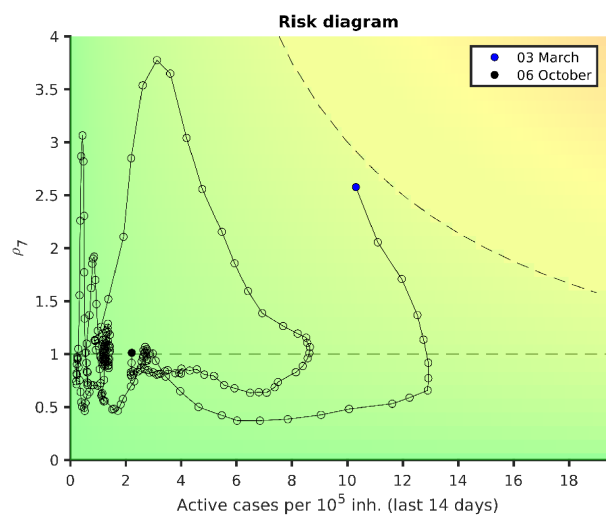
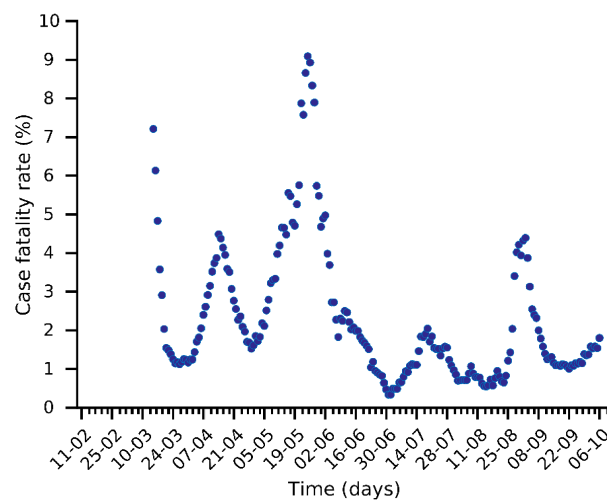
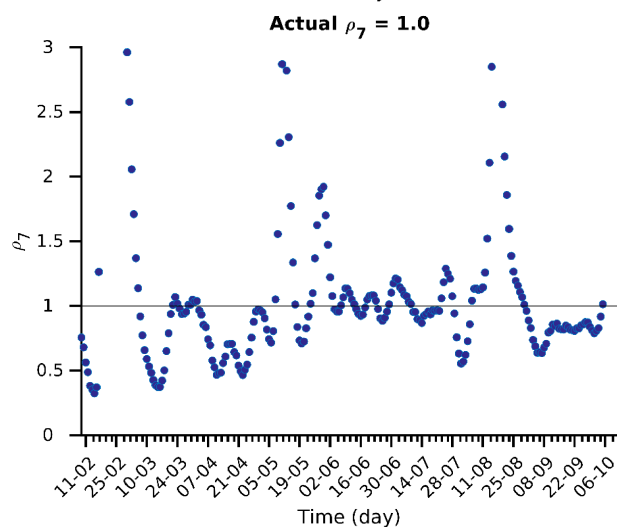
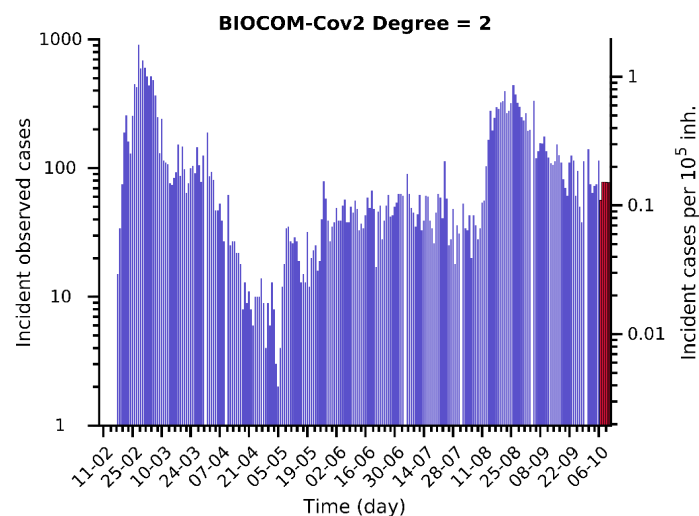
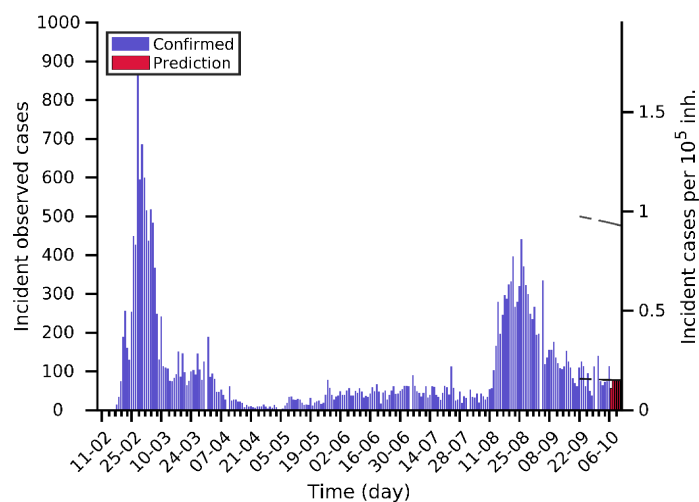


Predictions for next days

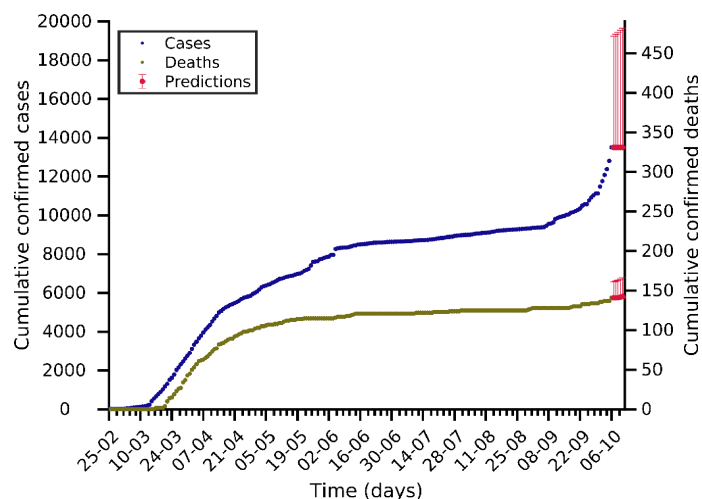
Day	Number of cases	95% Confidence Interval
07-10-2020	24409 (+56)	[24353 - 24676]
09-10-2020	24565 (+78)	[24353 - 24841]
11-10-2020	24719 (+77)	[24421 - 25017]

Current indicators

A ₁₄	EPG	CFR
2	2	1.80 %



Malaysia 06-10-2020. Pop: 32.4M. Cumulative incidence: 42/10⁵

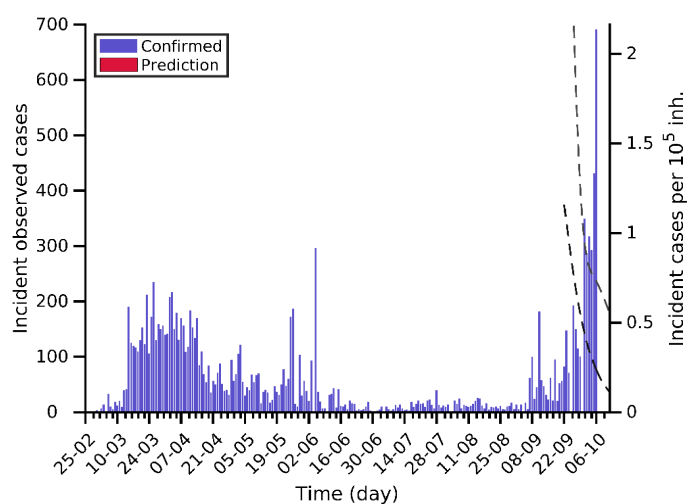


Predictions for next days

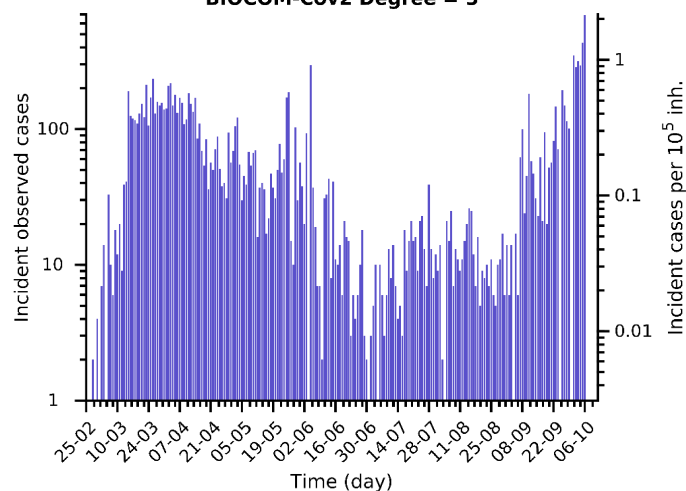
Day	Number of cases	95% Confidence Interval
07-10-2020	13504 (+0)	[13504 - 19237]
09-10-2020	13504 (+0)	[13504 - 19438]
11-10-2020	13504 (+0)	[13504 - 19652]

Current indicators

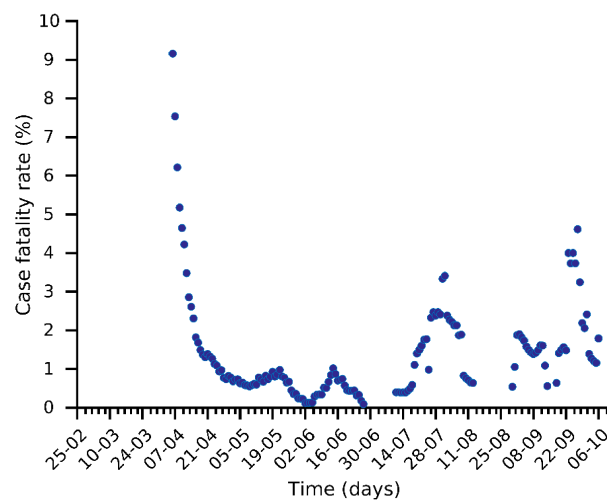
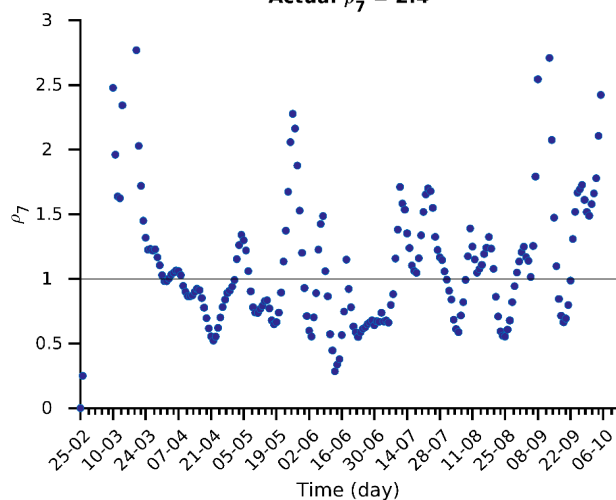
A ₁₄	EPG	CFR
10	24	1.79 %



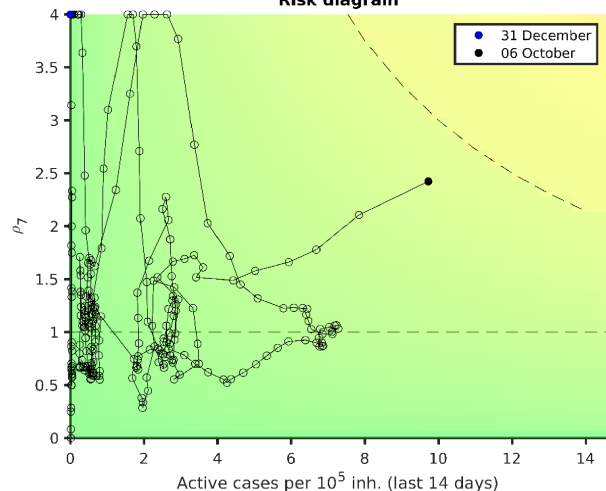
BIOCOM-Cov2 Degree = 3



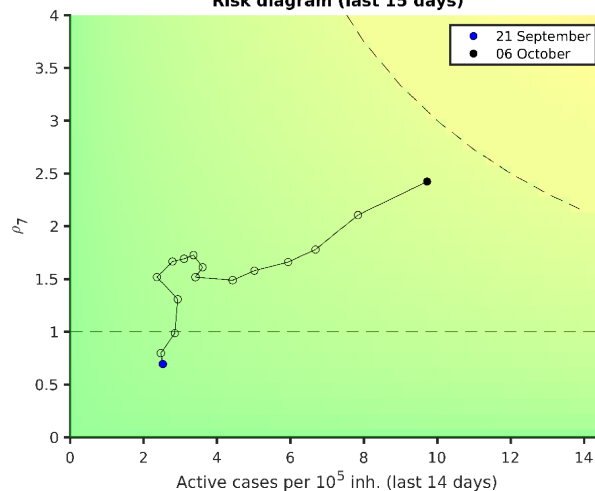
Actual $\rho_7 = 2.4$



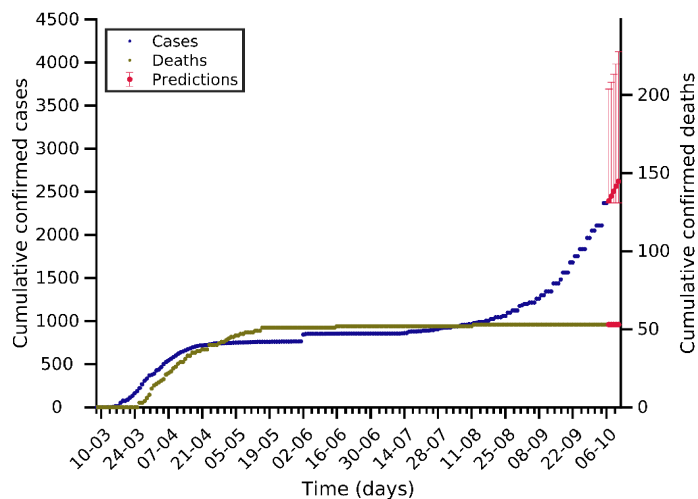
Risk diagram



Risk diagram (last 15 days)



Andorra 06-10-2020. Pop: 0.1M. Cumulative incidence: 3067/10⁵

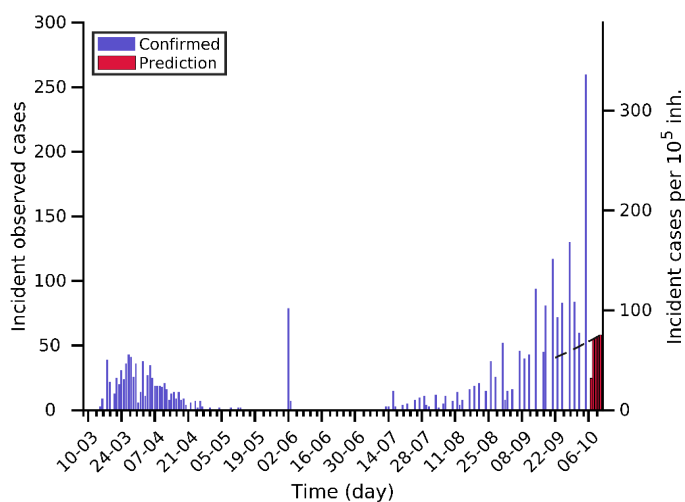


Predictions for next days

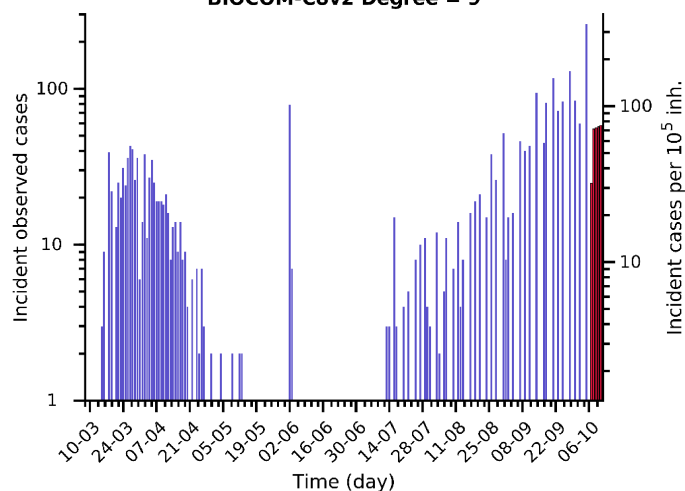
Day	Number of cases	95% Confidence Interval
07-10-2020	2395 (+25)	[2370 - 3692]
09-10-2020	2506 (+56)	[2370 - 3866]
11-10-2020	2621 (+58)	[2370 - 4126]

Current indicators

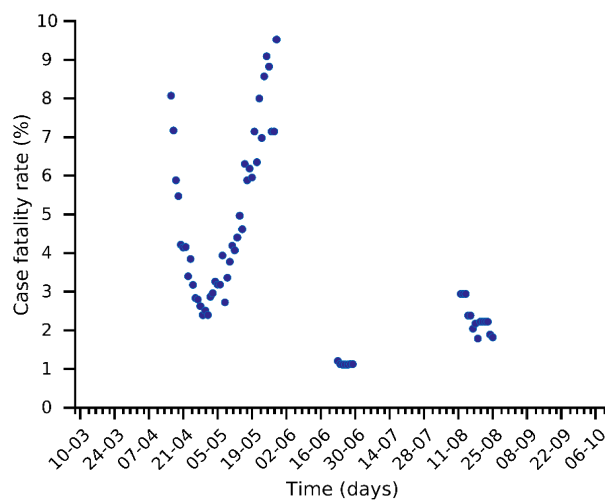
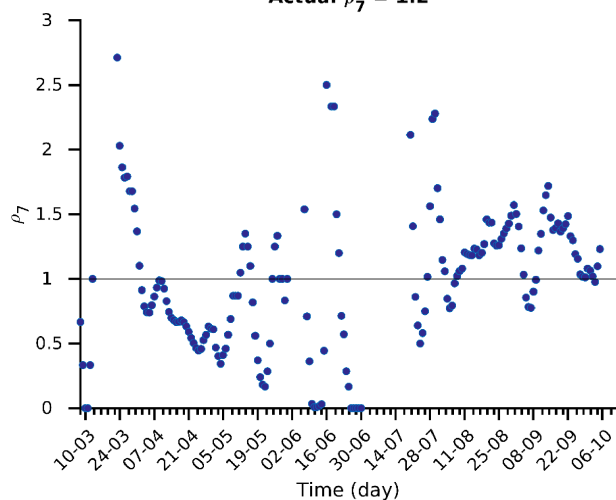
A ₁₄	EPG	CFR
892	1098	0.00 %



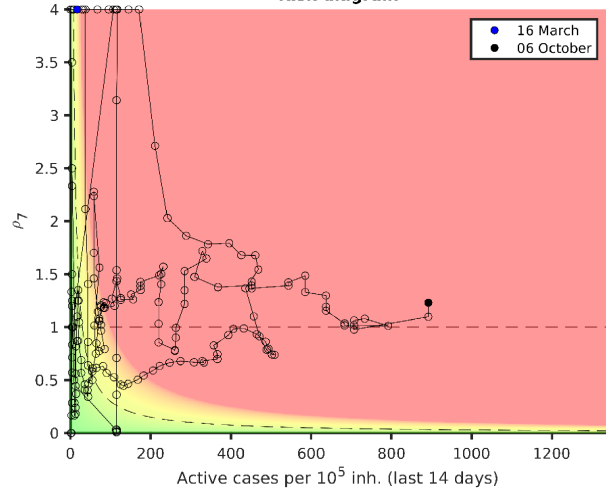
BIOCOM-Cov2 Degree = 9



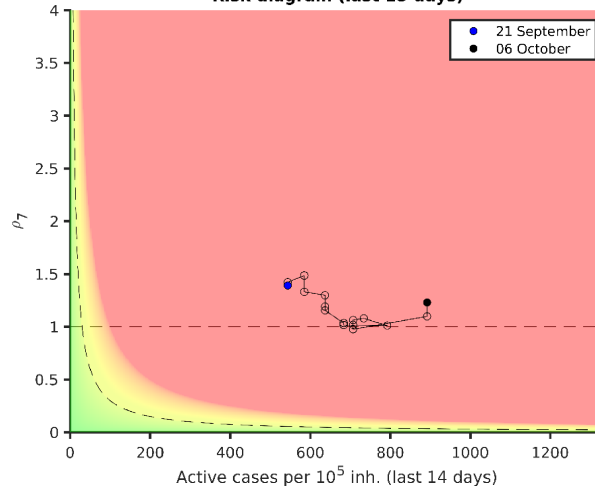
Actual $\rho_7 = 1.2$



Risk diagram



Risk diagram (last 15 days)



Methods

Methods

(1) Data source

Data are daily obtained from European Centre for Disease Prevention and Control (ECDC)⁸ and country official sources (when indicated). Daily data comprise, among others: total confirmed cases, total confirmed new cases, total deaths, total new deaths. It must be considered that the report is always providing data from previous day. In the document we use the date at which the datapoint is assumed to belong, i.e., report from 15/03/2020 is giving data from 14/03/2020, the latter being used in the subsequent analysis.

(2) Data processing and plotting

Data are initially processed with Matlab in order to update timeseries, i.e., last datapoints are added to historical sequences. These timeseries are plotted for individual countries and for the UE+EFTA+UK as a whole:

- ✓ Number of cumulative confirmed cases
- ✓ Number of reported new cases
- ✓ Number of cumulative deaths

Then, two indicators are calculated and plotted, too:

- ✓ Case fatality rate: number of cumulative deaths divided by the number of cumulative confirmed cases, and reported as a percentage; it is an indirect indicator of the diagnostic level.
- ✓ ρ : this variable is related with the reproduction number, i.e., with the number of new infections caused by a single case. It is evaluated as follows for the day before last report ($t-1$):

$$\rho(t-1) = \frac{N_{new}(t) + N_{new}(t-1) + N_{new}(t-2)}{N_{new}(t-5) + N_{new}(t-6) + N_{new}(t-7)}$$

where $N_{new}(t)$ is the number of new confirmed cases at day t after applying a 7-day moving average to the new cases dataset, so that fluctuations (e.g., weekend effect) are smoothed.

(3) Classification of countries according to their epidemic level: the scale Biocom-Cov

Countries are assigned a degree in the discrete Biocom-Cov scale, which aims to facilitate a simple way of assessing the situation of the country. It is based on the level of daily new cases per 100,000 inhabitants as follows:

Pandemic degree	Daily new incident cases per 10 ⁵ inh.
0	0
1	0-0.1
2	0.1-0.5
3	0.5-1.25
4	1.25-2
5	2-3
6	3-5
7	5-8
8	8-14
9	>14

⁸ <https://www.ecdc.europa.eu/en/geographical-distribution-2019-ncov-cases>

(4) Fitting a mathematical model to data

Previous studies have shown that Gompertz model⁹ correctly describes the Covid-19 epidemic in all analysed countries. It is an empirical model that starts with an exponential growth but that gradually decreases its specific growth rate. Therefore, it is adequate for describing an epidemic wave that is characterized by an initial exponential growth but a progressive decrease in spreading velocity provided that appropriate control measures are applied. Once in the tail, predictions work but the meaning of parameters is lost.

Gompertz model is described by the equation:

$$N(t) = K e^{-\ln\left(\frac{K}{N_0}\right) \cdot e^{-\alpha \cdot (t-t_0)}}$$

where $N(t)$ is the cumulated number of confirmed cases at t (in days), and N_0 is the number of cumulated cases the day at day t_0 . The model has two parameters:

- ✓ α is the velocity at which specific spreading rate is slowing down;
- ✓ K is the expected final number of cumulated cases at the end of the epidemic.

This model is fitted to reported cumulative cases of the UE and of countries that accomplish two criteria: 4 or more consecutive days with more than 100 cumulated cases, and at least one datapoint over 200 cases. Day t_0 is chosen as that one at which $N(t)$ overpasses 100 cases. If more than 15 datapoints that accomplish the stated criteria are available, only the last 15 points are used. The fitting is done using Matlab's Curve Fitting package with Nonlinear Least Squares method, which also provides confidence intervals of fitted parameters (α and K) and the R^2 of the fitting. At the initial stages the dynamics is exponential and K cannot be correctly evaluated. In fact, at this stage the most relevant parameter is α .

It is worth to mention that the simplicity of this model and the lack of previous assumptions about the Covid-19 behaviour make it appropriate for universal use, i.e., it can be fitted to any country independently of its socioeconomic context and control strategy. Then, the model is capable of quantifying the observed dynamics in an objective and standard manner and predicting short-term tendencies.

(5) Using the model for predicting short-term tendencies

The model is finally used for a short-term prediction of the evolution of the cumulated number of cases (3-5 days). The confidence interval of predictions is assessed with the Matlab function `predint`, with a 99% confidence level. These predictions are shown in the plots as red dots with corresponding error bar. For series longer than 9 timepoints, last 3 points are weighted in the fitting so that changes in tendencies are well captured by the model.

(6) Estimating non-diagnosed cases

Lethality of Covid-19 has been estimated at around 1 % for Republic of Korea and the Diamond Princess cruise. Besides, median duration of viral shedding after Covid-19 onset has been estimated at 18.5 days for non-survivors¹⁰ in a retrospective study in Wuhan. These data allow for an estimation of total number of cases, considering that the number of deaths at certain moment should be about 1 % of total cases 18.5 days before. This is valid for estimating cases of countries at stage II, since in stage I the deaths would be mostly

⁹ Madden LV. Quantification of disease progression. *Protection Ecology* 1980; **2**: 159-176.

¹⁰ Zhou et al., 2020. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *The Lancet*; March 9, doi: 10.1016/S0140-6736(20)30566-3

due to the incidence at the country from which they were imported. We establish a threshold of 50 reported cases before starting this estimation.

Reported deaths are passed through a moving average filter of 5 points in order to smooth tendencies. Then, the corresponding number of cases is found assuming the 1 % lethality. Finally, these cases are distributed between 18 and 19 days before each one.